Telephony

June 13, 1936

Fundamentals of Inductive Interference

By ARTHUR L. ALBERT

Associate Professor of Electrical Engineering, Oregon State College

THIRD AND CONCLUDING ARTICLE in series dealing with the basic principles of the inductive interference problem. This instalment analyzes the methods of induction and discusses the desirability and effectiveness of transpositions in both power lines and telephone circuits. Refer to the issues of March 7 and April 11 for the two preceding articles in the series

THE TWO preceding articles of this series (TELEPHONY of March 7 and April 11) have presented the basic principles of the inductive interference problem and have discussed power systems and certain of the factors determining their telephone influence factor.

It was shown that noise-producing voltages were induced along the wires of a telephone circuit, and that the telephone line wires were also raised to voltages *above ground.* Resultant voltages between wires tend to cause noise currents to flow around the telephone line and through the connected telephone sets; voltages to ground act through the line unbalances to produce noise.

It was also brought out that for given values, the *balanced* voltages and currents of the power systems were not nearly so bad in inducing noise-producing voltages as were the *residual* values. The influence factor of a power system was also shown to depend on the configuration of the line wires and many other considerations such as terminal apparatus, transformer connections, grounding arrangements, and the generated wave shape.

This article will conclude the series by analyzing the methods of induction and discussing the desirability and effectiveness of transpositions both in the power line and the telephone circuits. In presenting this analysis it is advisable to consider separately the effects of balanced and residual components in producing noise. Constant reference from this article to the other two of this series is suggested.

Voltages Induced by Balanced Voltages

A three-phase power line paralleled by a metallic telephone line is shown in Fig. 1. Balanced voltages exist between each power wire and ground as discussed in the preceding article. *If* the power wires were *very* close together, these balanced voltages would theoretically produce no resultant dielectric field at the telephone wires. Of course, each voltage would *tend* to produce a field, but these effects would be *equal* in magnitude and 120 degrees out of phase, and would cancel each other.

The power wires are, however, a considerable distance apart. Cancellation of the fields is, therefore, not complete and a resultant dielectric field exists to ground at the telephone wires. This field raises the telephone wires to *voltages above ground.*

Transposition in the power line located at about one-mile intervals (for parallels at roadside separation) will reduce such interference. As shown in Fig. 2, the positions of the power wires are interchanged. Each phase thus has a predominating influence one-third the distance. The tendency will be to raise each telephone wire of Fig. 2 to three voltages—e_{gA}, e_{gB} and e_{gC}—above ground, corresponding to each phase. These voltages will be about equal and 120° out of phase, and will almost cancel, leaving the much smaller resultant voltages e_{g1} and e_{g2} of Fig. 1.

As is evident from Figs. 1 and 2, telephone wire No. 1 is closer to the power line than wire No. 2. The resultant voltage to ground, e_{g1}, will, therefore, be greater than e_{g2}. Of course, this occurs *even* if the power line is transposed. This causes a

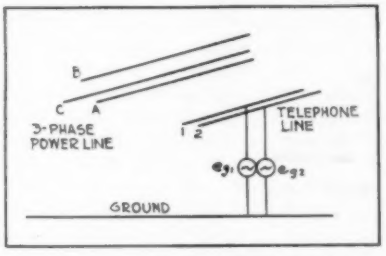

Fig. 1. The Relative Positions Occupied by a Three-Phase Power Line and a Metallic Telephone Circuit Are as Shown. The Telephone Wires Are Raised to a Voltage Above Ground. Repesented by the Small Generators, e_{g_1} and e_{g_2}. The Voltage, e_{g_1}, Exceeds e_{g_2}.

difference of potential or voltage to exist *between* the telephone wires.

Transpositions in the telephone line will remedy this. Thus, in Fig. 3 the positions of the telephone wires are so interchanged that e_{g1} and e_{g2} are equal. No appreciable voltage will exist *between* the wires, but it will still exist *to ground.*

Voltages *to ground* act through series unbalances, and unbalances to ground to cause noise. Voltages *between* wires force noise currents around through the connected telephone sets. Note in particular that

telephone transpositions are *only* effective in *equalizing* voltages to ground and thus reducing voltages *between* wires.

Voltages Induced by Residual Voltages

A residual voltage acts between the three power wires in parallel as one conductor and ground. The residual voltages with a metallic telephone line were shown in Fig. 3 of the first article of this series (TELEPHONY of March 7).

Fig. 2. The Phase Which Is Closest to the Telephone Circuit Predominates in Its Interfering Effect.

A residual voltage raises each telephone wire to a voltage above ground as shown in Fig. 4. Since wire No. 1 is closer than wire No. 2, the voltage e_{g_1} will be greater than e_{g_2}. Thus, voltages exist *to ground* and also *between* wires.

Voltages to ground act through series unbalances, such as poor splices, and through unbalances to ground, such as tree "leaks," to produce noise. Voltages between wires force noise currents through the connected telephone sets.

Under these conditions, power line transpositions are *only* effective when the residual voltage is due to capacitive unbalances to ground, due to the fact that the power wires are not properly transposed. If the line is properly transposed, then a residual voltage is probably due to poor generating equipment, to transformers, or similar causes. The only solution then is to determine the source of the residual voltage, and correct conditions.

Transpositions in the telephone circuit will *not* eliminate the induced voltages to ground, but will *equalize* these voltages since the positions are interchanged. Hence, little difference of potential will exist *between* wires and noise *from this source* will be reduced.

Voltages Induced By Balanced Currents

Balanced currents are equal in magnitude and 120° out of phase, and their magnetic fields tend to cancel. *If* the power wires were *very* close together, these currents would induce little voltage in paralleling telephone circuits.

Since the power wires are spaced some distance apart, a resultant magnetic fields exists at the telephone wires, and voltages are induced in series along the wires. These voltages are represented by generators in the telephone wires of Fig. 5. At a given instant the directions of these voltages are as indicated by the arrow points.

Power line transpositions are effective in reducing induction from balanced currents. Thus, the power transpositions of Fig. 3 interchange the power wires so that the effect of each phase predominates one-third the distance.

With this arrangement, *three* voltages, which are about equal in magnitude and almost 120° out of phase, will be induced in *each* telephone wire for each complete power transposition barrel of 360°. These voltages in each wire will tend to cancel, and hence the resultant voltage in each telephone wire will be reduced.

Even with the power transpositions, the induced voltage in wire No. 1 will be greater than that in wire No. 2, and noise currents will be forced through the telephone sets at the ends of the line. Telephone transpositions, such as in Fig. 3, will equalize these induced voltages. Hence, the resultant voltage *between* wires will be small and the noise will be further reduced.

Voltages which are induced in series along the telephone wires by balanced power line currents may also act through line unbalances to produce noise. Currents producing noise will be caused to flow by such voltages if poor splices exist in the wires or if the insulation is not good. (See "Noise in Metallic Circuits" in the first article of this series.)

Voltages Induced by Residual Current

Residual currents flow along the power wires in parallel as one conductor, to ground through the neutrals of grounded transformers, and through the earth as the other side of the circuit. For these currents, the three-phase power line acts as a grounded, one-wire circuit.

Since this condition was discussed in detail in the first article of this series, it will not be necessary to consider it at length. Such residual currents will induce voltages in series along each telephone line wire essentially as represented by the small series generators of Fig. 5.

If the telephone line is *not* transposed, the voltage induced in the wire closer to the power circuit will be greater than that induced in the other. A resultant voltage will, therefore, exist *between* wires, and noise currents will flow. Telephone transpositions will *equalize* these voltages and will greatly reduce the noise.

Even if the telephone wires are transposed, the induced voltages in each wire will still be present; and they will cause noise if series unbalances or unbalances to ground exist. This action will be in accordance with the last paragraph of the preceding section.

Power transpositions will be effective *only* if the residual currents are due to the fact that power line is not properly transposed and that the resulting capacitive unbalances to ground are causing the residual currents. If they are due to connected equipment or to similar causes, these must be corrected.

Inductive Effects Seldom Exist Separately

For clarity, the method by which noise-producing voltages are induced in telephone circuits was broken down into separate components. From this it should not be inferred that under actual conditions these exist separately. In fact, these components act together, and it is usually very difficult to distinguish between them.

Fig. 3. Power Transpositions Tend to Reduce the Voltage Induced on Each Telephone Line Wire. The Telephone Transpositions Tend to Equalize These Voltages.

For example, if a power line voltage raises an untransposed telephone line to a voltage above ground, one wire will be raised to a higher voltage than the other. Thus, the power circuit voltage simultaneously causes a *difference* of voltage *between* wires and a voltage to *ground*.

Calculations of Inductive Effects

It is possible to calculate the voltages which will be induced by power circuits into paralleling telephone circuits if the determining factors are known. In general, such studies are somewhat theoretical. Curves and other information by which such calculations can be made will be found in bound reports entitled "Inductive Interference," published by the California Railroad Commission in 1919 at a price of $10.

The distance of separation and the length of the parallel are very important factors in determining the amount of induced voltage. The importance of avoiding parallels and of keeping the separation as great as

possible cannot be overstressed. The increasing use of private rights of way for both power and telephone service is important in reducing interference.

Distance Between Transpositions

The fact that transpositions should be close together has been stressed throughout this article. It is sometimes difficult for an engineer to see why this should be so. If a circuit must be transposed, why not put only one or two transpositions in it, even though they may be ten miles or more apart?

To explain this phenomenon, the transmission of electrical energy along a line must be studied. As an article on page 11 of July 27, 1935, issue of TELEPHONY showed, the current and voltage waves are attenuated as they flow along a line; and since time is required for their travel, they do not have the same instantaneous phase relations along the line.

For explaining the reason for close transpositions, suppose that the condition, "voltages induced by balanced voltages," be again considered. First, let it be assumed that both the power and the telephone lines are not transposed.

Voltages will be induced in each telephone wire by the predominating effect of the closest power phase. Now suppose that the power line is transposed as shown in Fig. 3, but that the telephone circuit is still untransposed.

In transposing the power line, the phase positions are changed at each transposition point, turning the line through 120° at each point or 360° for the entire transposition barrel. Now, instead of one resultant voltage, E_1 (assuming phase 1 is closest all the way), for a non-transposed power line, three voltages, E_1, E_2, and E_3, will be induced as indicated. These three voltages are *theoretically* equal in magnitude and 120° out of phase and tend to neutralize each other.

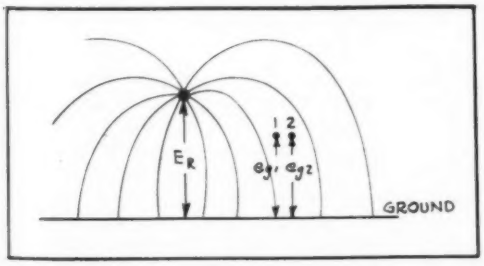

Fig. 4. The Dielectric Field Caused by a Residual Voltage E_R Raises the Telephone Wires to Voltages, eg_1 and eg_2 Above Ground.

Such neutralization does take place to a large degree, but is not complete for two reasons: First, due to the attenuation of the power line, the line voltages are attenuated; hence, the power line voltages of each transposition section are not the same and thus the *magnitudes* of E_1, E_2 and E_3 are not the same.*

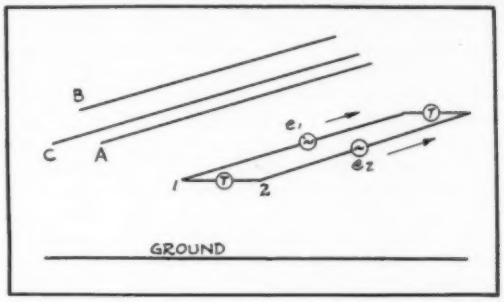

Fig. 5. Currents in the Power Wires Induce Voltages e_1 and e_2 in Series Along the Telephone Wires.

Second, a small but appreciable period of time is required for the waves to travel along the line.

The power voltages are, therefore, *not* exactly 120° out of phase, and hence the induced voltages E_1, E_2, and E_3 are not exactly 120° out of phase. They do not, therefore, neutralize each other completely, and a voltage is left to force noise currents around through the telephone line.

This phase shift is more pronounced for the harmonics than for the fundamental because the wave length of the harmonics is much shorter. Thus if the length of power line between transposition is such that the phase change is one degree for the fundamental, it would be 27° for the 27th harmonic. Transposing the telephone line will tend to equalize this resultant voltage on each wire, and will be effective in causing further noise reduction.

The effects just discussed are of such a nature that the only practicable solution is to have transpositions close together. The spacing of power transpositions depends on several factors, such as the separation between power and telephone lines, coordination with telephone transposition plans, and length of parallel. Spacings of about one mile for parallels at roadside separation are usually satisfactory.

*This attenuation effect in power lines is of little, if any practical importance; attenuation is of importance, however, in considering crosstalk.

An interesting illustration of this principle as applied to crosstalk was an attempt made to reduce this on two early New York-Philadelphia circuits by installing *a transposition in one* line at a point about midway between these cities. The failure of this to reduce the crosstalk was attributed by those telephone pioneers to the fact that "This gives a stronger inducing force in the first half of the circuit than in the half beyond the point of transposition."

They were, of course, referring to the effect of attenuation, and probably did not, at that time, recognize the importance of the phase differences.

The Practical Problem

Two important problems face the telephone engineer. These are: (1) How should circuits be designed to prevent interference? (2) What should be done if interference is experienced on a circuit? A few simple and perhaps obvious suggestions will be made.

First, keep telephone lines and power lines as far apart as practicable. When extensions of either power or telephone lines are being planned, engineers of both systems should cooperate in selecting routes where the length of parallel is a minimum and the distance between lines is a maximum.

Second, power and telephone companies should avoid non-standard methods of construction. Standard specifications are well known and should be followed unless a very careful study by experts proves that the departure from accepted methods will not cause excessive interference. Good power machinery with a low TIF and accepted connections for transformers should be used.

Third, power-line transpositions and telephone-line transpositions should be installed. These must be properly coordinated if they are to be effective in reducing noise. If standard telephone transposition schemes are installed, and if they are coordinated with correct power transpositions, then if noise is expe-

rienced it will usually be due to poor operation, or maintenance, of either the telephone or electric lines or both of the systems.

Standard transposition schemes are generally available to telephone companies. Information on their design is contained in an article by H. S. Osborne entitled "The Design of Transpositions for Parallel Power and Telephone Circuits," Transactions A. I. E. E., Vol. 27, Part 2, 1918.

If noise is experienced on properly constructed and operated systems, then it is probably due to some unusual circuit condition; and it is often the task of the telephone people to point out this condition, since the power companies *may not be aware* of its existence.

As such noise conditions are often of an intermittent nature, a clue to their cause may sometimes be obtained from an examination of the log of power switching operations kept in the power substations. As an example of this method of locating interference, one illustration will be cited as typical of what may be expected.

Very bad noise was reported on certain telephone lines in a city area. The noise, according to complaints, seemed to occur at no regular intervals, and often no trouble was experienced for days. Monitoring on the circuits was of no use; the noise never occurred then.

A vacuum-tube amplifier connected to a vacuum-tube detector and then to a recording millivoltmeter was connected to a vacant telephone line in the affected area. One side of the line was grounded at the distant end to aggrevate the noise, and "noise metallic" was measured at the central office by the recording millivoltmeter system.

After some days of operation, excessive noise was recorded on the line at a given period for a few hours early one morning. A *time* had been determined; and a check of the operating logs showed that a certain generator had been operated with its neutral grounded during this period.

This machine was found to have a very bad TIF and satisfactory arrangements were made to prevent further trouble. Low river water conditions, and the entire consumption of available river flow for factory operation, had resulted in only generating hydro power when water was available; and this occurred at erratic intervals, determined by stream flow and factory operation.

Summary

The various methods by which noise-producing voltages are induced into telephone circuits have been discussed in this article. It is pointed out, however, that one type or another type of induction seldom exists separately; they usually act together in causing excessive noise.

The effects of transpositions in both the power and the telephone systems have also been discussed. It is very important that these transpositions are coordinated and that they are relatively close together.

Although the problem of preventing crosstalk is a part of the inductive interference problem, it has not been treated in this series of articles.

IN THE NATION'S CAPITAL

By FRANCIS X. WELCH,
Special Washington Correspondent for TELEPHONY

WHEN President Roosevelt signed his name to the Rural Electrification Authority Act, he set in motion an agency which during the next ten years will endeavor to lend nearly a half-billion dollars to farm groups and others for the purpose of erecting rural power lines and promoting increased use of electricity on the farm.

It is a fair gamble that no New Deal measure is destined to have a more direct or important effect on the smaller rural telephone companies than this rather progressive piece of legislation.

Consider the picture as a whole. According to the 1930 census there are 6,288,648 farms in the United States. Of this number it is conservatively estimated that electric service is available to about 1,000,000, of which about 800,000 are actually connected and using central station electric service in a more or less effective manner.

In other words, only about 12 per cent now have electric facilities. Optimistic friends of REA are predicting that by the end of the 10-year period, REA will have electrified or been responsible for electrifying about one million farms.

Skeptical observers doubt this very much and point to the difficulty of getting sound loans for rural power at the rate of 40,000,000 a year. This difficulty will increase as time goes on, because the best prospects will be first to sign up. After the cream has been skimmed, the going will be rougher as prospects literally grow farther apart (meaning increased construction expenses per customer) and, in most cases, less blessed with the goods of this world.

However, the degree of success or failure of the REA movement itself is not the chief concern of the smaller telephone companies. It is admitted that a good many rural power lines will be built in districts where service over existing telephone facilities may become seriously impaired by inductive interference.

Therefore, whether REA connects a million or a half-million farms to central stations within the next ten years, the whole movement is bound to present an increasingly important problem for rural telephone plant operators. It would not be out of line to say that, in some sections, for every new electric consumer secured, a rural telephone subscriber's service will be impaired and, often enough, the new electric user may be that same family residence.

REA officials have considered the problem and are somewhat disturbed about it. They are, on the whole, an ambitious and sincere group, trying to do a good job and make the money go as far as possible.

ONE CASE in Nebraska popped up two weeks ago which may be said to have the earmarks of a test case, or at least an important precedent. It involved the Cortland Telephone Co., which operates a grounded service out of Cortland, Neb., into neighboring sections of Gage and Lancaster counties, both near and due south of the state capital—Lincoln. In this territory, pole lines of the Southeastern Public Power District are under construction. It is not a REA project but part of the Public Works Administration program. However, the principles involved are the same and REA is watching the matter carefully.

The Cortland company filed objections with the Nebraska regulatory commission on the ground that por-

tion of the proposed power lines would parallel its own grounded lines and render service almost worthless. The telephone company told the commission quite plainly that unless provision were made for changing its lines from grounded to metallic service, it might just as well get out of business.

The company declared its willingness to withdraw its objections if the public power district would defray the expense of the change-over. The company added that it could not afford to foot the bill itself and. furthermore, it did not think that it should fairly be required to do so.

The answer to this particular problem is up to the Nebraska commission and it may be already settled one way or the other before these lines appear in print, but the answer to the whole problem will never be settled until it is settled right here in Washington, D. C.

It is an old issue—this matter of inductive interference. However, it has received comparatively little legal attention, chiefly because regulatory authorities have usually been successful in getting electric utility companies to agree to relocate circuits or their own pole lines, or in doing something else to avoid an open dispute.

The South Dakota Supreme Court hit the nail right on the head back in 1920 when it held in Dakota Central Telephone Co. v. Spink County Power Co. (42 S. D. 448, 176 N. W. 143) that a power company being the junior occupant of the field must bear the cost of whatever may be reasonably necessary to eliminate interference with telephone service. The Oregon Supreme Court held practically the same thing in 1924, and similar rulings have been registered by state commissions in Iowa, Missouri, Vermont and Virginia.

There is some authority to the contrary, notably in Wisconsin, but the bulk of legal opinion (what there is of it) seems to favor the telephone companies, which usually have prior operating rights.

HOWEVER, the law is one thing and economics quite another. Is REA prepared to defray the cost of metallicizing grounded telephone circuits every time its rural power runs into an interference problem? Your correspondent made some effort to find out and was not very successful. The answer seems to be that REA has not yet made up its mind.

Here is how the matter stands from the REA viewpoint: To make its program to promote rural electrification a success, it has to make the loans as attractive as possible to the prospect. That means keeping expenses down.

Already REA has made a good beginning at keeping pole line costs down to around $1,000 a mile in territory where private electric utility experts had predicted that it never could be done. But one can see that if the cost of metallicizing or otherwise protecting rural telephone service is added to power pole-line cost, the burden on individual power customers will be increased and the prospects will naturally be harder to persuade.

The nub of the whole controversy is that REA has no authority from Congress to spend the money—only to lend it. That means that every dollar put out to protect telephone service would have to go into the power-line loan to be paid back into the Treasury.

THE POSSIBLE solution is obvious. REA would be glad to help out the rural telephone groups to protect their service in interference situations, provided it did not have to charge the extra money against the power customers. If the law could be amended so as to allow REA to divert funds to the elimination of telephone interference, the rural telephone industry would have no further trouble with the rural electrification movement. Until such an amendment is made, however, REA is going to continue to require that rural electric lines be built as cheaply as possible.

Legally speaking, interference disputes are going to be harder to settle because of the fact that only a handful of state commissions (twelve to be exact) have any jurisdiction or authority over municipally owned utilities, or other public bodies.

Heretofore, there was little trouble because municipal plants rarely built power lines beyond their own corporate limits, but under the REA program the bulk of the construction will be by public or quasi-public bodies. There seems to be nothing to prevent such agencies in most states from putting up their lines where they please and thumbing their noses at the telephone companies.

TELEVISION seems almost certain to come out of its hole this summer. At least, there will be more serious talk about it, which means more public interest, which in turn means public demand. And public demand is usually filled in some fashion.

The FCC is holding a series of hearings from which the commission hopes to assemble sufficient information and data upon which to base its policies toward radio and television.

The fact that television's chief difficulty is economic rather than technical is no secret even to the casual news reader. But the extent of the economic problem is truly amazing. The commission's immediate task is to try to establish some sort of uniform standard so that television sets can operate interchangeably, either on the sending signals of stations using the Farnsworth system or those using the rival technique developed by the Radio Corp. of America.

Television technique differs widely from sound broadcasting in that any change in operating methods renders all outstanding equipment perfectly useless. Thus, when RCA's new and large television broadcaster on the top of the Empire State building in New York City goes into operation this summer, it is likely that receiving sets will be limited largely to the company's staff for experimental purposes.

The FCC is trying to figure out what can be broadcast after television is perfected and also how it will be paid for. One FCC official has estimated that it would cost at least $200,000 for each production of a moving picture made exclusively for television transmission. Telephone wire leasing would easily run up another $100,000 and, he asks, "What advertiser would spend that kind of money for a two-hour show?"

The first subjects will probably be out-door games, and other such inexpensive spectacles, but on the whole, television will never sell very widely until it has more to offer than a prize-fight or polo match.

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New York Chain Store's Use of Wired Radio

During the middle of May the Great Atlantic & Pacific Tea Co. started "wired radio" service (TELEPHONY of February 29, 1936) in 50 of its New York City stores. From a central studio, music interspersed with brief announcements goes out over telephone wires to be broadcast in the local units.

The announcements are for clerks as well as customers; some are advertisements, some are orders to employes, some are notices of immediate price changes—which formerly took a day to go through.

A few of the larger department stores have for several years used a variation of this idea: a loudspeaker system with outlets all through the store so that clerks and section managers can be notified immediately of changed orders, or pepped up for special sales.

Business Relations—Taxes

A SPEAKER before an important meeting of business leaders at Detroit recently made the point that business has made a great mistake in not selling itself to the people. Had business and industry educated the public more on its work and achievements for the advancement of national interests—the argument proceeded—they would be in better shape today to meet the attacks of bureaucratic politicians.

In other words, business has neglected its public relations. Utility corporations know what that means, and they are realizing it now more than ever before, for they have been—and still are—the special target for political snipers. The drive for higher taxes is now bearing down on all types of business, and makes the average business man realize what public service companies have been up against for many years. The general agitation ought to help the utilities in their prolonged struggle against political prejudice and persecution.

IT IS NOT so surprising that business may have overlooked the importance of building public relations. A man—or a corporation—intent on doing a good job is apt to be so busy that he fails to talk about it very much. In fact, isn't it the *doer*, rather than the *talker*, who gets things done?

The average employer prefers a worker who "saws wood" and says little to the one who is always bragging about how well he is doing his job.

In this age, however, it is necessary to advertise, to tell the world what we are doing and call attention to the fact that our goods or services are well worth buying. Then when an attempt is made to injure an industry, it is in a position to defend itself and remind the public that they have proof of its real contributions to the general welfare.

So it pays for great industries to convince the people that they have done much to place the United States at the head of the nations of the world. With all the complaining and fault-finding about American conditions, no one can truthfully deny that the standard of living in this country is higher than anywhere else on the globe.

THE Detroit speaker—B. C. Forbes—closed his address with a thought that every citizen should consider.

"Industrialists," he said, "indisputably have done more than politicians to raise America to first place among modern nations. It was industrialists and those they engage who have led in raising our standards of living higher than anything known elsewhere; who led in invention, in research; who piloted the science of management to heights not approached in any other land; who brought about here, as nowhere else, individual possession of homes, of automobiles, telephones, radios, labor-saving household appliances, improved agricultural implements and machinery, individual and family savings, unmatched elsewhere."

This important fact calls for especial consideration during the current year.

AND ANOTHER topic that will be uppermost in the minds of the people during this momentous year is TAXES. Disagreeable as this subject may be, the tax bill is staring John Public squarely in the face—and there isn't the remotest suggestion of relenting pity in that look. We are going to hear a lot about taxes from now on, and we are bound to feel them as well as hear about them.

Governmental expenditures consume about one-third of the total national income. The per capita cost for government this year is estimated at $125. In 1915 it was only $33. This means that while national income has increased only 30 per cent, taxes have gone up 104 per cent. (Incidentally, the per capita national debt, which was $12.26 in 1913, reached the mark of $246.00 on June 1, 1936.)

Some industries are hit harder than others—notably the automobile, tobacco, and oil businesses—and likewise most public utilities which are caught between the regulators and the tax collectors. Automobile taxes have reached the point where they exceed the amount the manufacturers get for the cars they ship to their dealers.

In 1935 the petroleum industry paid more than a billion dollars in taxes, which was three times the net earnings of the entire industry. "In other words," they say, "the oil companies paid $3 in taxes for every dollar they earned on the $12,000,000,000 investment."

IN THE UTILITY field taxes are nearly as much as the total wage and salary expense, which, of course, is the largest item in their operations. There are differences in taxes in various localities, but taking the country as a whole it is estimated that the average telephone pays a tax of nearly $7 a year—that is, the company pays about that for every telephone in service. The Ohio Independent Telephone Association has tabulated a list of 96 different taxes that are paid by the telephone companies in that state, directly or indirectly.

If their increasing tax bills drive people to pay more attention to governmental matters, there will be some gain from the way citizens have to dig down in their pockets to meet their political charges. We have

always been justly accused of paying too much attention to our own business affairs and too little to public problems.

No doubt it is a fact that the rank and file of citizens have allowed the politicians to run our government about as they pleased. We have paid the bills and done little else but groan about their size. Henceforth, however, there is likely to be less carelessness in this particular. The bills are going to be so big as to insist on more serious attention.

Calvin Coolidge, who was undoubtedly the most "tax-conscious" of all our presidents, once said in discussing taxes:

"No system has ever been devised under which any person living in this country could escape being affected by the cost of our government. It is felt in the prices of those prime necessities of existence—food, clothing, fuel, shelter. I want the people of America to be able to work less for the government and more for themselves. I want them to have the rewards of their own industry. That is the chief meaning of Freedom."

Missourians Find Serious Problems Needing Solution

INTELLIGENT COOPERATION of all telephone men needed to find solution to problems affecting the future of many companies. Means of eliminating obnoxious practice of "mooching" telephone service urgently needed. No other public utility service can be enjoyed unless paid for. Effective publicity program, on a national scope, urged to inform the public of the outstanding problems involved in furnishing telephone service. All officers re-elected for another year at annual convention

A LARGE CROWD of Missouri telephone men and women gathered at the Muehlebach Hotel in Kansas City on May 27 and 28 to attend the annual convention of the Missouri Telephone Association. Approximately 250 persons were registered. In the absence of President Houck McHenry, of Jefferson City, on account of ill health, First Vice-President A. M. Benedict, of Richards, presided at the convention sessions.

The officers re-elected for the ensuing year are as follows: President, Houck McHenry, Jefferson City; secretary-treasurer, R. W. Hedrick of Jefferson City; first vice-president, A. M. Benedict, Richards; second vice-president, W. R. Journey, Higginsville; third vice-president, T. R. Schweer, Rolla; and fourth vice-president, Elmer Weakley, Plattsburg.

There were 22 manufacturers and supply houses represented either by exhibits or personal representatives.

After calling the first session to order on Wednesday afternoon, May 27, Mr. Benedict, who is owner and manager of the Richards Telephone Co. at Richards, expressed a tribute to Mr. McHenry whose failing health has prevented his meeting with Missouri telephone people for the last two conventions. Mr. McHenry's presence has been missed by his friends for he has long been a loyal and staunch supporter of the Missouri Telephone Association, of which he has served as head for many years.

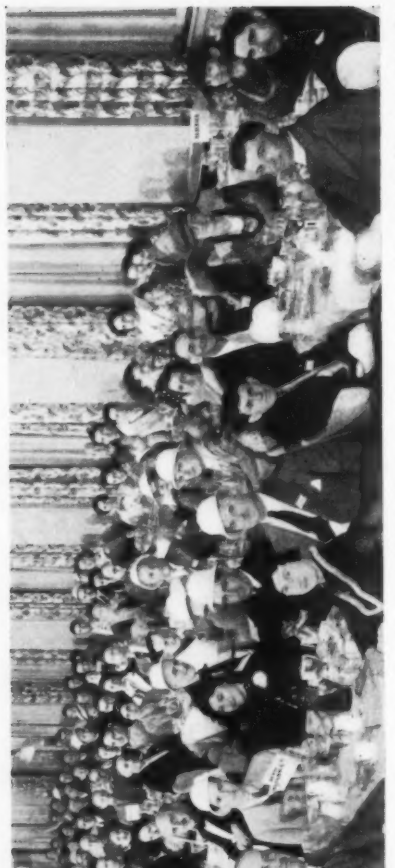
PRESIDENT HOUCK McHENRY, of Jefferson City, Although Unable to Attend This Year's Convention of the Missouri Telephone Association, Was Again Selected as Its Chief Executive.

Following a few other introductory remarks, Mr. Benedict directed his comments to the telephone business in small towns and rural communities. He said in part:

"About 35 years ago, 1901 to 1905, telephone service came to the small towns and farms of the Middle West, almost as a snowstorm in the night. We awoke one morning, a few years after the first rural mail route was established, to find telephone lines spreading like spider webs in every direction. Originally 70 to 90 per cent of these lines, and the exchanges and service established, were conceived and built under the famous (or infamous) plan known as the farm mutual plan.

Today, 60 to 70 per cent of the rural and small town telephone service in 10 mid-western states is operated under this so-called non-profit plan, a plan or system of ownership that was considered ideal at the time it originated. It was the cheapest construction and the cheapest service rate ever devised by man, in most cases too cheap to be in any way practical.

In five states—Missouri, Kansas, Oklahoma, Arkansas and Texas—there are about 2,000 exchanges with these mutually-owned and operated lines connected — with a pole line mileage of 250,000 miles, a wire mileage of more than 300,000 miles, and



There Was an Attendance of More Than 300 at the Annual Banquet of the Missouri Telephone Association, Held in the Muehlebach Hotel in Kansas City on Wednesday Evening, May 27.

more than three-fourths of a million telephone stations connected. On 80 per cent of these lines and instruments little, if any, repair work or maintenance has been done.

Thousands of miles of these lines have grown up in underbrush and brambles, with the poles and wire rotting and in disuse. Service received over these lines is, for the most part, commercially valueless. Why have these lines gone into disuse and failed? It couldn't be the high service cost.

Since 1901 to 1905, when most small-town and rural telephone service was established, there have come to the small town and rural life, many expensive and ingenious gadgets and devices for which these people were persuaded to spend their money. Some of them were useful and practical, but many were expensive luxuries.

Among these have been the phonograph, automobile, gasoline engine and tractor on the farm. Electric service in the towns brought radios, vacuum sweepers, irons and electric refrigerator service. These things have cost many millions in invested capital and many millions more in current monthly bills. This is part of the answer as to why small town and rural telephone business has suffered.

To have all these modern conveniences has over-taxed the average small town and farm home owner. He can not make payments of all the bills. He decides to eliminate one or more of them; so, which one? He naturally falls on the telephone first. Why?

When you have the answer to that question, you will have at least a start on the answer to the Kansas editor's question as to why it would not be better to have a small service charge plus a metered service (TELEPHONY of May 23, page 13).

The farmer discontinues his telephone knowing that if he needs to call the veterinary or physician or to save himself the time and expense of a drive to town, he can go down the road a quarter of a mile to a neighbor's home where he gets telephone service by borrowing or bumming it —and pays nothing. Thus he gets all the service he needs, with no investment, no monthly bill and no cost to himself.

He realizes all the while that there is no scheme by which he can sponge the use of the neighbor's electric service, or the use of the telephone manager's automobile. Of those things, he must have his own and lay down the money.

If some plan might be devised whereby it would be as difficult for the small-town home owner, farmer or even dweller in the large city to receive telephone service or the benefits from it, as it is to have the benefits of electric service without having his home wired and the service installed—or the benefits of the motor car without putting out the money and owning one—then a large share of the problems of the small town and rural telephone business would be solved.

In 1920 there were 100 telephones in a certain small town, a telephone saturation of 4½ per cent. Then came electricity. Today there are 33 telephones in the town and 60 electric meters. Inferior service could not have caused this change, for the company has practically never had a service complaint. It surely could not have been that the rate for service was high. The electric company is taking out of the town three times as much money as the telephone company.

There are more electric meters because there is no possible way of receiving the service or any benefits from it without a liberal outlay of money, without having one's house wired, a meter installed, and available cash for the monthly bill. Telephone service is too easy to obtain, without money and without price.

In Missouri there is a law providing a fine or imprisonment, or both, for connecting to the electric company's lines and using the service without pay, but thousands of people use the telephone company's service without paying and it seems nothing can be done about it.

What scheme or plan can be devised to eliminate this pernicious practice? Many home owners, with malice aforethought, have their telephones removed fully expecting to step next-door to use whatever telephone service they need without paying. Many people in business—people that can afford it—have their telephones removed and use one next-door.

In my opinion, one thing is sure: Unless telephone companies can be given better control over the service furnished by them, more rigid rules by which it is to be sold and paid for, a more definite understanding as to who is entitled to use the service and to what extent, many of them are doomed.

There is no reason, of course, why anyone should be compelled to have a telephone in his home. Also, there is no reason whatsoever why the telephone company should furnish service to any person unless he has a telephone in the home—except,

of course, at a public pay station.

There are many peculiar things about the telephone in its relation to the public and other public utilities. A man can have his gas or electric meter removed and the service dis-

VICE-PRESIDENT A. M. BENEDICT, of Richards, in Addressing the Convention Stated That the Telephone Business Is the Most Universally Used But Least Understood of All the Utilities.

continued without affecting in any way the town or any persons in it except his immediate family. No one else's service is disturbed; no one cares.

But if he removes his telephone, his relatives, friends, neighbors, and perhaps many townspeople are directly affected, as well as many people in distant towns and states. His business associates are directly injured, the service they have and are paying for has been restricted, they must climb into a motor car and drive to confer with him on even trivial matters. . . .

Many telephone men attend these conventions feeling, perhaps, that there is hardly enough important business to warrant their attending, but it would seem to me there are vast, almost unsolvable problems to be tackled, and it will take the best brains in the business to work them out. I fear if we don't hang together we may all hang separately.

Every man should attend these assemblies and get the other fellow's ideas about these problems. No one small exchange manager can work them out. No small group of service companies can work them out. The thing is national in size and it will take everything we have, in the way of resourcefulness, to do the job.

I was not alarmed at the statistics given by the president of the Kansas Telephone Association in his address at the convention in Abilene, to the effect that more than 600 telephone companies in Kansas are showing an unprofitable financial performance. I have felt sure for the last several years that that condition existed. There seems to be a vast gulf between the facts Samuel Tucker, of Pleasanton, Kans., has unearthed and the facts that Paul A. Walker's Telephone Division of the Federal Communications Commission thinks it will unearth down at Washington, D. C.

I was pleased and much interested in the discussion of a layman's ideas of telephone problems by C. W. Wheeler, Kansas publisher, before the Kansas telephone convention (TELEPHONY of May 23.) Mr. Wheeler's address gives you a glimpse of the enormity of the problems facing business in the years just ahead. Mr. Wheeler was only thinking out loud what most any man about town might be thinking. Any well-posted telephone official knows the answers to Mr. Wheeler's queries.

But here is the crucial part of the situation: It would take from four hours to a whole day of solid discussion and explaining to give Mr. Wheeler the answers to his questions —and then only one man would have been told. No telephone executive, well enough informed to give Mr. Wheeler the right answers to his inquires, has the time to give. Nor does any busy editor have that much time to give to the telephone man furnishing the information.

It is an unfortunate truth that while the telephone is the most universally used by the public of all the utilities, being limited only to the number of inhabitants, yet it is perhaps the least understood of all of them. Only telephone men know the vast maze of detail, with its intimate relationship to the public, in this indispensable business. How to get this knowledge to the majority of the public is the great question.

It might be done through the medium of advertising—the extensive use of well-written, informative, catchy, paid newspaper and magazine articles, weekly or monthly, covering a period of several years. Such an advertising program should be uniform and national in scope. But how could such a proposition be financed?

It is possible it might be done through state associations or through the United States Independent Telephone Association. Certainly, no small company that I know anything about could finance a program of advertising that could be depended upon to bring any sort of results."

Upon the conclusion of Mr. Benedict's address, M. R. Gray, of Kansas City, commercial superintendent of The United Telephone Co., gave a talk on "800 Telephones in Two Weeks," dealing with the method used by that company in putting on sales campaigns for additional subscribers, extension telephones and sale of other services rendered by the telephone companies.

At this time Secretary R. W. Hedrick, of Jefferson City, read a telegram from Oscar Burton, of Tyler, Texas, president of the Texas Telephone Association, extending greetings and good wishes to the Missouri Telephone Association from the Texas association and inviting the Missouri telephone people to visit Texas during the Centennial being held this summer and fall in Dallas.

Dr. S. T. Neill of Clinton was called on to speak a few words to the convention. Dr. Neill is one of Missouri's pioneer telephone men and has always had the interest of the telephone industry at heart.

M. L. Golladay of Holden, the only honorary member of the Missouri Telephone Association, at this time was invited to make a few remarks. Mr. Golladay asked the convention to stand in silent tribute to the memory of departed members, among which were Ben Scruggs, Colonel Hudson,

R. W. HEDRICK, of Jefferson City, Will Continue to Serve as Secretary of the Missouri Association During the Ensuing Year.

Mr. Plummer of Ava, and G. W. Schweer, of Clinton, who died last August. Miss Wilma Scruggs, daughter of the late Ben Scruggs, who now operates the Cass County Telephone Co. at Harrisonville, and one of the few woman telephone executives in Missouri, was asked to stand and was introduced to the convention.

The next number on the program was an address on "Rural Electrification" by J. W. Wopat, consulting engineer of Ft. Wayne, Ind. He gave a splendid address on the subject. After his excellent talk, a number of questions were asked by various members present and much help and benefit was derived from this feature of the program.

At this time Secretary Hedrick expressed the regret of President Houck McHenry for his inability to be present, being confined to his home because of poor health, and conveyed Mr. McHenry's good wishes to the association.

Mr. Hedrick spoke of the illness of E. F. Carter, general manager of the Missouri Telephone Co., Columbia, a member of executive committee of the association and of Mr. Carter's sorrow in the recent loss of Mrs. Carter.

Mr. Hedrick mentioned the automobile accident of Mr. and Mrs. P. K. Higgins near Columbia. Mr. Higgins is another pioneer telephone man, and is president of the Fidelity Telephone Co. Mr. and Mrs. Higgins are both confined to the Boone County Hospital, Columbia, by injuries sustained in this accident. A motion was made by M. L. Golladay that messages be sent to those mentioned. It was seconded and carried.

The Kansas Telephone Association was well represented at the Missouri meeting and the chairman asked all of the Kansas delegation to stand. Samuel Tucker, president of the Kansas Telephone Association, was then called on to say a few words to the convention.

W. J. Moore, president of the Boone County Telephone Co. of Harrison, Ark., who was among the prominent visitors, was also asked to make a few remarks at this time.

The next number on the afternoon program was an address on "The National Situation" by F. B. MacKinnon, president of the United States Independent Telephone Association, Chicago. Mr. MacKinnon's talk was well received and dealt with the problems before the telephone people today in governmental matters.

The chairman then appointed the following committees:

Resolutions: Dr. S. T. Neill, Clinton; M. L. Golladay, Holden; and W. R. Journey, Higginsville.

Nominations: C. B. Morton, Lebanon; E. O. Turner, Crane; and Wilma Scruggs, Harrisonville.

The banquet, which was held Wednesday evening in the Colonial ballroom of the Muehlebach Hotel, was attended by over 300 people. Souvenirs were distributed as the guests entered the ballroom. Music was furnished during the dinner, followed by a 30-minute entertainment. After the entertainment dancing was enjoyed.

Thursday's Proceedings

The meeting on Thursday morning was in the form of a joint operators' and maintenance men's conference.

The first feature was a talk on "Preventive Maintenance, and its Effect on Plant Operation" by C. A. Quigg, district plant chief of the Southwestern Bell Telephone Co., Hannibal. Mr. Quigg's talk touched on every-day problems.

H. B. Whatley, toll traffic supervisor of the Southwestern Bell Telephone Co., Kansas City, gave a talk on "Our Job" which was well received.

Upon being called on, Herbert Couch of Topeka, secretary of the Kansas Telephone Association, expressed his good wishes to the Missouri association.

M. R. Thompson of Toledo, Iowa, was also called on to make a few comments.

Joe Cobb, of the original "Our

(*Please turn to page* 42)

The Operators' Corner

By MRS. MAYME WORKMAN
Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

CLOSE attention to the proper handling of "no circuit" conditions is advocated. Series No. 244

IN THE majority of telephone exchanges, during the past few years, "NC" and "NCO" conditions have been infrequent because of ample circuit facilities. However, with the current increase in toll traffic it is reasonable to assume that these conditions will again be encountered in the near future.

Telephone customers have become accustomed to having their long distance calls completed without delay; therefore, we must put forth every effort to continue to render this quality of service. Service of an inferior quality will not be acceptable. What can the chief operator and supervisor do to make this possible? First of all, review with their force the proper handling of "no circuit" conditions, both on direct and built-up circuits; keep in touch with the trend of traffic; develop teamwork; give proper attention to the handling of multi-switch calls, etc.

The operator can also assist materially in keeping "no circuit" conditions at a minimum by watching her use of toll circuits, such as remaining on the line after passing an order; answering supervisory and toll line signals promptly; taking action on calls when required, without delay; passing orders and announcing calls clearly and distinctly; ringing properly, as soon as plug is fully inserted; answering TX signals promptly and taking action after signal is answered; adhering to operating practice with respect to releasing and holding the circuit; attaching tiger clips when required; avoiding the use of unauthorized routes.

These and many other service items have a direct bearing upon the use of toll circuits which is reflected in the number of "NC" and "NCO" conditions encountered. The completion of "no circuit" call orders also enters into the picture. The handling of NC call orders is similar in many respects to the completion of outward calls delayed by a "no circuit" condition and the same general supervisory methods apply.

We have educated our customers to a high quality of toll service and any let-down will result in service criticism. Do your bit by adhering to the operating practice for handling these conditions.

Questions from Illinois Operators

1. What is meant by NCO?
2. Is it necessary for an operator to put a "T" on messenger tickets?
3. If there isn't a report given on a person-to-person call within an hour from the filing time, is the report chargeable after that?
4. If a party receives a chargeable report on a call and then would say, "Just let the call go and get me Mr. So-and-So at some other town," would the first call be counted as a canceled call?
5. What report is given when you are ready on a call and the party who placed the call cannot be located?

The answers to these traffic questions may be found on page 35.

Best

Monophones

Above: The Type 35A5 wall-mounting Monophone for automatic use. Below: The Type 34A3 self-contained desk Monophone for manual use, easily convertible for automatic operation by merely adding a dial.

Duties and Qualifications of a Chief Operator

By MISS SALLIE HUNTER

Chief Operator, Southern Continental Telephone Co., Cookeville, Tenn.

WINNER of second prize article in the contest conducted last fall by the Southern Continental Telephone Co. for the best article on the principal duties and qualifications of a chief operator

FURNISHING telephone service consists of numerous details and every detail has an important bearing on the service as a whole. If we desire to be prosperous and successful, we must use our time, opportunities, and talent, so that they will earn something for us through our use of them--use is the test of life.

That you may become a proficient operator, you must always be prompt about your work. You should bear in mind that in your work of serving the public you represent your company more directly than any other employe. Therefore, your attitude toward your work at the switchboard should be both business-like and friendly.

It is necessary to have a definite plan of procedure in telephone operating work. The cords and keys are your tools. You must know how and when to use them and see that your girls do the same and that they also put proper reports on tickets.

It is necessary to check your calculagraph every morning and see that the switchboard is free from everything except that which is required in an operator's work. Be sure that the room has the proper ventilation, that the floor has been swept clean daily, the room dusted, and the operators' chairs properly adjusted. It is your responsibility to check up daily on these things.

You are responsible for the service rendered by the employes under your supervision and for their conduct in the operating room. A chief operator has a lot of responsibility. Sometimes she has a girl who is very slow in learning. A telephone operator of this type is a great trial to the chief operator. She fears to advance an employe of this type to a more responsible position.

You should always teach them to be courteous and pleasant. In order to know whether the service is being handled in a standard manner, you should have a thorough knowledge of the operating instructions so as to be able to instruct operators and see that new girls are properly trained. It is our duty to put forth every effort to do our best and help build up the service and be neat about our work. How easy it is to work when everybody in the office is careful in doing her part. Let us ask ourself these questions every now and then: "How do I rate as an employe in today's work?" "Am I up to par?"

We often wonder why some people are more successful in life than we are and we are prone to say: "Well, they had a better break than I." But things don't usually happen that way. There is a cause for everything and the cause for success or failure starts and ends within our power to control as individuals.

The folks who get the most satisfaction out of what they start to do are those who finish what they start. At least they make every effort to do so. In order to do our duty, we must put more effort in our work. No day's work is good enough unless we have put our best effort into it. When we do otherwise, we just "slouch through." As someone has remarked, "We do not use more than half of the tools in our chest." Is this doing our duty?

▼ ▼

Longest Teletypewriter System for Airlines Company

Installation of the longest teletypewriter system to be utilized by any airline in the world has been completed for American Airlines, Inc., by the A. T. & T. Co., it was announced on June 5.

Connecting offices of the company in Chicago, Detroit, Buffalo, Newark, New York and Boston, the new printer circuit, will be more than 900 miles in length. It has been designed to facilitate the company's handling of reservations, weather information, connections and routine business.

Flashes and Plugs—News Briefs and Comments

Eleven telephone and telegraph companies included in a New York business survey showed an improvement of 24.8 per cent in earnings in 1935 as compared with 1934.

* *

The 1935 tax bill of the Illinois Bell Telephone Co. amounted to $9,404,703. According to evidence submitted to the state commission the company's net earnings for the year were $12,696,700.

* *

In Belgrade, Yugoslavia, the government asks telephone subscribers to sign a pledge that they will refrain from swearing, scolding or quarreling over the telephone.

* *

Charts prepared by Professor Ogburn of the University of Chicago show the United States is "halfway out of the depression low of 1932-1933." Increased use of first-class mail and telephone service is ahead of newspaper circulation gains.

* *

A submarine buoy telephone, by which a sunken craft can communicate with rescuers, has been adopted by the Swedish navy. An ordinary telephone instrument is enclosed in a buoy that can be released to rise to the surface when a submarine is sunk by accident. The buoy, carrying telephone wires from the submarine, is equipped with a flashlight to attract attention on the water.

* *

According to Dr. J. O. Perrine, associate editor of the Bell System Technical Journal, a gossipy neighbor talking for 277 years uses only as much energy as is consumed by an ordinary electric light bulb burning a single hour.

* *

"So greatly is the telephone a part of our daily lives," says the Ravenna (Ohio) Record, "so much is it taken for granted, that most people do not realize how very young this vital invention is. It was just 60 years ago that it was invented and it is estimated that there are in the United States today approximately 11,500,000 persons who were living at the time the telephone was invented."

* *

Because they used the "person-to-person" type of calls, long distance telephone calls have been costing Washington government departments $600,000 a year. The White House is said to have ordered more economy in tolls.

Bell Publicity Methods and Telephone Rates

HEARINGS in FCC investigation last week bring out testimony concerning publicity campaigns of the Bell System companies for creating favorable public opinion preparatory to seeking rate revision. Use of newspaper advertising and motion pictures to increase public good will. Campaigns planned to meet needs of individual situations of companies

WHEN the hearings in the FCC investigation of the Bell company were resumed on June 2 in Washington after a recess from April 28, the publicity methods used by the Bell System companies in connection with rate increases, were taken up by Samuel Becker, special counsel for the Federal Communications Commission. Sessions were held on June 2, 3 and 4, when the hearing was recessed to Tuesday, June 9.

At the hearing on June 9, the commission representatives charged that Bell System companies contributed money to civic and charitable organizations for purposes of propaganda. The charges, together with results of a study of banking relations and outside contracts, were contained in two voluminous reports prepared by FCC investigators.

At the hearing on Tuesday, June 2, E. S. Wilson, vice-president of the A. T. & T. Co., was the witness. Mr. Wilson, who until recently had charge of "relations with public bodies," said he now has charge of relations with "national and international organizations, legislation in Washington, contacts with the Internal Revenue Bureau, Treasury Department and other departments that have matters which come up here in Washington."

"Rate Revision" Better Psychology Than "Rate Increase"

He agreed with Mr. Becker that nine-tenths of the work connected with a plea for higher rates should be a campaign to build up public sentiment, but said it was "not exactly true" that a "publicity routine" had been built up for rate cases.

"We made suggestions to member companies," he commented.

Mr. Becker produced a large scrapbook containing samples of newspaper publicity handouts, newspaper advertisements, window posters, and other publicity material. He asked the witness whether all 19 of the Bell System operating companies had not been told to use similar methods in securing public approval of rate increases.

Mr. Wilson said they had.

"By the way," said Mr. Becker, "I think you were responsible for popularizing the term 'rate revision' instead of 'rate increase.'"

"Yes," was the reply, with a laugh.

"It was easier to take that way?" the FCC counsel insisted.

"Not exactly," replied Mr. Wilson. "A 'rate increase' would scare anybody. It is bad psychology. No person likes to pay more for a service than he has paid heretofore. We wanted to show that the company's revenue was low and the increase would be fair."

Standard Form of Publicity Campaign in Rate Cases

The documents produced by Mr. Becker indicated that the A. T. & T. had a standard form of publicity campaign in all rate cases, involving nearly a dozen methods. These included canvasses of subscribers in which their endorsement was sought; newspaper advertisements for use before, during, and after rate hearings; publicity handouts in the pay envelopes of the companies' employes; the same sort of material in envelopes containing bills sent to subscribers and "publicity for the press."

Mr. Becker sought to show that company officials first sound out the members of the public service commission in secret, informal discussions and then the newspapers in the area.

The next step, he claimed, is for the company officials to approach leading citizens, especially men at the head of concerns which are large customers of the telephone company, and, finally, to enlist the support of "commercial clubs," such as the Rotary Club. Mr. Wilson testified that the A. T. & T. makes a practice of placing operating company officials on the membership roster of all these clubs.

Mr. Becker sought to show that as soon as the company has lined up sufficient support for its application in the fashion stated, it prepares a press announcement which it releases to the newspapers along with large paid advertisements.

Rate Cases Decided on Merits by Commissioners

Mr. Becker said creation of favorable public sentiment was designed to remove fears of regulatory bodies that public condemnation would descend upon them if rate increases were granted. "One reason you did this," he told the witness, "was to give them courage to grant increases. Don't you think this practice might affect the judgment of commissions?"

"No," Mr. Wilson returned. "We wanted cases decided on their merits. We only tried to prepare the public minds so that, if the commission did order an increase, the public would take it in good grace."

"Don't you consider that this public sentiment affects the judgment of regulatory bodies as well as the merits of your case?" Mr. Becker demanded.

"I know a good many commissioners," the witness replied, "and not one of them would consider a case except on its merits."

Mr. Becker said companies in the Bell System spent $4,848,048 in contributions and dues to chambers of commerce, social, and athletic organizations, boards of trade, and similar groups.

"These organizations would be very valuable to you in rate cases?" he inquired.

"Sometimes very valuable; sometimes very annoying," was the answer.

Mr. Wilson testified that the task of "preparing the public mind" in this fashion sometimes takes weeks or months and that the expense is charged up to subscribers. He also testified that the company uses motion pictures to the same end, exhibiting them to church groups and civic organizations.

Mr. Becker sought to show that the net effect of the company's publicity tactics was to remove all opposition to a rate increase application before the application is made and to try the applica-

tion not before the public service commission but in the press.

He introduced a "confidential" document from the A. T. & T.'s files showing that in 1920 W. J. O'Connor, then assistant to the president of the Southwestern Bell Telephone Co., had told an Atlanta conference of A. T. & T. "personnel representatives" that his company "plans to try rate cases in newspaper offices; that is, by presenting facts to the editors of newspapers before the case is presented to the commission for a hearing."

Mr. Becker argued that the public is not capable of passing upon the merits of a rate application and that, in trying its case before the bar of public opinion, the telephone company provides the public with only one side.

Mr. Wilson agreed that in many cases state public service commissions are swayed by public opinion and would not be willing to grant increases unless faced with evidence that the telephone using public was prepared to accept them without protest.

Samples of Publicity Used in Rate Cases

To show that the publicity practices in question represent a standard A. T. & T. policy, Mr. Becker introduced a brochure which Mr. Wilson had sent out in 1920 to the presidents of all the A. T. & T.'s subsidiaries. He brought out in questioning the witness that the policy laid down in that 1920 brochure, entitled "Suggestions for Rate Revision Publicity," is still in effect today.

The brochure prescribed a schedule of publicity and amplified that schedule with samples from actual cases in Nebraska, Pennsylvania, Montana, Georgia, Wisconsin, Michigan and Maryland. It was issued, Mr. Becker showed, just after the federal government had released its war-time control over the telephone industry and turned the companies back to private hands.

In the ensuing two years, he also showed by the A. T. & T.'s records, 205 rate increase cases, involving 5,475 exchanges, were filed with state regulatory bodies. According to Mr. Wilson, the results were "mostly upward."

Ohio Bell's Method of Promoting Goodwill

On Wednesday, June 3, FCC Special Counsel Becker endeavored to show that public relations activities in widely scattered sections were patterned uniformly after a formula developed in the A. T. & T. Co. offices in New York. Mr. Becker described efforts to create favorable public opinion toward the Bell companies in Ohio, Georgia, Indiana, Illinois, New York and in the Southwestern and Pacific Coast areas.

R. E. Marburger, vice-president of the Ohio Bell Telephone Co. in charge of public relations, spent most of the day testifying about contacts with newspapers, civic organizations and subscribers to present the company's viewpoint on rates.

Mr. Becker brought out that the Ohio Bell company has pending before the Ohio Supreme Court the adverse decision of the state commission on its application for an increase of rates, first made in 1924 and denied in 1934. He questioned the witness to ascertain whether publicity campaigns had been undertaken in connection with the rate litigation and Mr. Marburger insisted that publicity activities had "no connection with the rate case."

Attitude of Ohio Newspapers Favorable to Company

Mr. Marburger said that the majority of the newspapers in the territory served by the Ohio Bell company were favorable in their attitude toward the company and its rates, and only a few, including the five of the Scripps-Howard chain, had attacked them.

It was the company's policy, he declared, to build up goodwill by acquainting its subscribers and the public generally with the facts in regard to its business and that the informed opinion of newspapers was invariably friendly, and rarely antagonistic. Naturally, therefore, since the company desired a "friendly press," it made an effort to "get accurate information to the newspapers."

"You didn't like the attitude of the Scripps-Howard papers then, did you?" Mr. Becker suggested.

"Probably not, and I don't like it now," the witness replied.

"Do you think only those papers oppose you which are lacking in knowledge of the facts," Mr. Becker asked, "or do you think their opposition is based on improper motives?"

Responsibility for Booklet on Newspapers' Attitudes

"I think often they do not have sufficient information to form a basis for editorial pronouncements, and that sometimes their motives are improper," Mr. Marburger replied. "In times and places where rates are a matter of local public agitation and opposition, papers sometimes take advantage of the fact to increase circulation."

Mr. Marburger verified and accepted responsibility for a booklet prepared under his supervision in November, 1933, in which the attitude of the Ohio newspapers in general and that of the Scripps-Howard chain in particular were dealt with.

From it Mr. Becker read numerous extracts, confirmed by the witness as expressing his own beliefs then and at the present time. Among the extracts was the following:

"Early in 1933 the Scripps-Howard chain began a campaign for lower telephone rates.

"This was in keeping with their regular policy of harassing the public utilities and public officials and in general espousing the cause of the 'poor citizen.' This policy is purely mercenary, as it is one of their principal means of getting circulation."

Mr. Becker brought out a letter written in 1922, which purported to show that Ohio Bell representatives went to two newspapers in Findlay, Ohio, with paid advertisements and a news item. The advertisement was accepted, he stated, and the news item printed.

"Is this practice of going to a newspaper with a news item in one hand and an advertisement in the other, done without your knowledge?" he asked Mr. Marburger.

"Yes," he replied, "But I would not consider it very reprehensible. It would not wound my sensibilities."

Mr. Becker asserted 90 per cent of the Ohio newspapers are favorable to the Ohio Bell company in the rate case now before the state supreme court.

"You seem to be satisfied with the attitude of the majority of newspapers in your state," Mr. Becker commented.

Mr. Marburger answered affirmatively, adding that most newspapers "refrained from attacking us."

Ohio Bell and Chamber of Commerce

The FCC special counsel said that in 1924 an article appeared in The Clevelander, organ of the Cleveland Chamber of Commerce. He described it as "extremely favorable to the company."

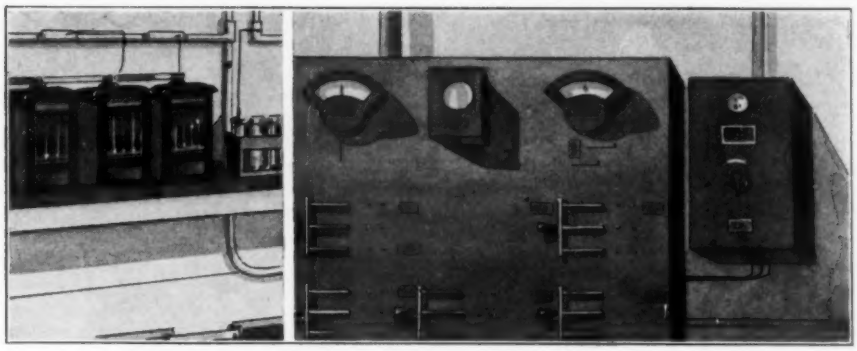
"Your company is a heavy contributor to the Chamber of Commerce, is it not?" he asked.

"It contributes," the witness replied, "I wouldn't say its contributions are heavy."

Mr. Becker said the company also gave advertising space in telephone books to the Chamber of Commerce without cost, which, he declared, "helped to cement friendly relations between the chamber and the Ohio Bell."

A series of exhibits was introduced by Mr. Becker to show that Bell operating companies had followed suggestions given in the brochure "Suggestions for Rate Revisions" which was offered in testimony on June 2—in individual publicity campaigns. He questioned Vice-President E. S. Wilson of the A. T. & T. Co. concerning activities in other sections.

The exhibits showed that telephone officials had addressed civic clubs and had been in touch with subscribers in Atlanta, Chicago and Gary, Ind., and had "mobilized employes" in New York, the Southwest and the Pacific Coast ter-



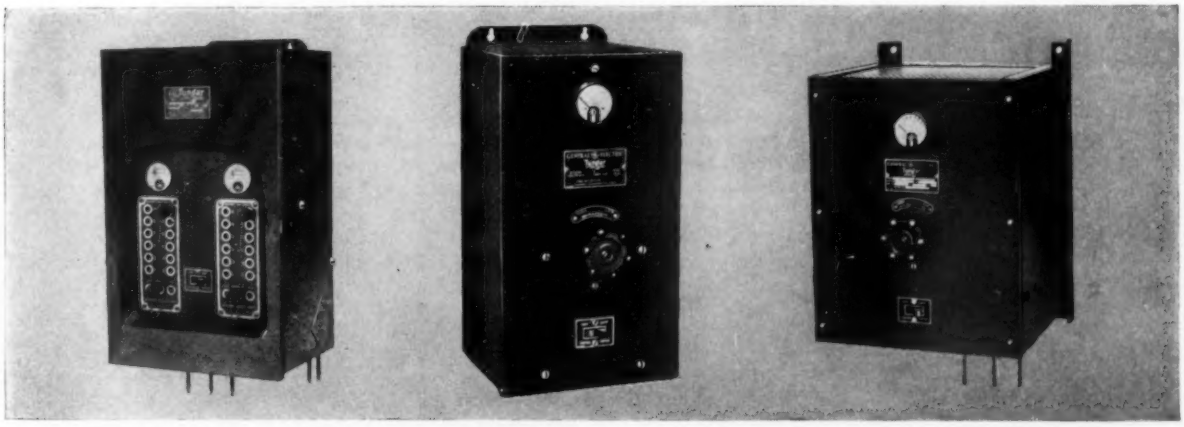
DEPENDABLE TELEPHONE SERVICE DEMANDS TUNGAR BATTERY CHARGING EQUIPMENT . . . .

Telephone service is only as good as its battery charging equipment. Behind the scenes of dependable telephone service are Tungar Battery Chargers and Copper Oxide Rectifiers. They give years of service . . . require a minimum of attention . . . assure the highest degree of operating efficiency and economy. Tungars are available for every type of Central Office and PBX application — large or small. Among the new Tungars is a 2-ampere Charger designed for use on a small PBX. Its output is filtered. It is equipped with a full-wave mercury-type Tungar Bulb.

For larger PBX's and Central Offices, a new 6-ampere Tungar Charger has been added. It is equipped with a 6-ampere full-wave mercury-type Tungar Bulb, with filtered output.

Copper Oxide Rectifiers for trickle charging include several new sizes. They provide a range of trickle rates from 10 milliamperes up to 1000 milliamperes.

For further information and specifications on G-E Tungar Chargers and Copper Oxide Rectifiers, write Section A-394, Merchandise Department, General Electric Company, Bridgeport, Connecticut.



Cat. No. 6RB6B7—12-amp. full-wave —External filter. (Cat. No. 3126680)

Cat. No. 6RB23C1—2-amp., full-wave —Internal filter. Uses full-wave Mercury Tungar Bulb.

Cat. No. 6RB10C5—6-amp., full-wave —Internal filter. Uses full-wave Mercury Tungar Bulb.

GENERAL ELECTRIC

SPECIAL RECTIFIERS

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

ritory to aid in presenting the company's views to the public.

FCC's View of Use of Publicity by Bell

With inter-company letters as exhibits, Special Counsel Becker sought on June 4, to show that publicity and politics were impressed in efforts to promote goodwill for the utility.

Mr. Becker, in concluding the examination of Vice-president E. S. Wilson, put into the record evidence which he said was intended to show that:

The Washington publicity firm of Thomas R. Shipp received $255,000 from the A. T. & T. and the Pennsylvania Bell company between 1920 and 1931. Besides general publicity activities in Pennsylvania, the Shipp firm was employed to make a five-year study of the "telephone situation in Indiana."

Mr. Shipp conferred with newspaper men, members of the Indiana Public Utilities Commission, heads of the Democratic and Republican committees and other officials and informed the A. T. & T. of state political developments.

The A. T. & T. attempted to array bankers and investors behind its moves for higher rates.

A suggestion that business men might "put pressure" on the Michigan commission for higher telephone rates was made by Mr. Wilson in 1920.

The A. T. & T. spent $257,000 between 1926 and 1935 making 56 "institutional" motion pictures, some of which were described as "powerful and subtle propaganda."

At one point, Paul A. Walker, directing the investigation, stopped the testifying to ask: "All this campaign of education— sometime referred to as propaganda—is paid for by the telephone subscribers, isn't it?"

Mr. Wilson replied affirmatively.

Publicity Campaign to Meet Demands of Situation

Centering his examination on the employment of Mr. Shipp in 1920 to study problems of the Indiana company, Mr. Becker asked Mr. Wilson why he was hired.

"The Indiana company was losing $1,000,000 a year." Mr. Wilson answered. "I employed him in order to get information on our situation there, which was desperate because of the rate situation."

Adding that the company had been unable "to get any satisfactory orders" from the Indiana commission, the witness said it was "in ill repute" in that state at the time.

Mr. Wilson said the publicity campaign started in 1920 had been to meet the demands of the situation in which the company found itself at the end of the period of government control of the telephone companies.

He presented figures showing the "depth of the hole" in the form of million-dollar deficits in Michigan and Indiana—company stocks "down to 92 and 95," and net returns of 4.4 per cent in 1919 and 3.8 in 1920. At the same time, he said, there were demands, which the company was unable to supply, for 303,690 additional stations in 1920 and 175,000 in addition in 1921.

He agreed with Mr. Becker that the financial condition of the company, whatever it might be, did not and would not justify resort to use of "improper political influence," but he insisted that it was an essential factor in a determination to engage in a "campaign of education," which he considered to be "always in order" and a matter of wisdom and necessity."

Motion Pictures Used to Increase Public Goodwill

The part of the Bell publicity campaign which included the use of 56 motion pictures was described by James M. Hamilton, vice-president and motion-picture director of the A. T. & T. Co. These pictures, produced in ten years at an original cost of $261,958, were distributed to Bell associated companies, which paid $170,417 for 2,492 prints furnished at actual cost of production.

Mr. Hamilton told the commission that the pictures were designed to demonstrate the telephone business to the mutual benefit of the company and its subscribers, without relation to rates or rate cases, but he hoped they had served to increase public goodwill.

"If you consider useful and helpful information propaganda, then our pictures are propaganda," he told Mr. Becker, in reply to a question. "But if you ask me, having in mind the sinister implication sometimes attaching to the word, then I would not agree that it should be used in connection with them."

Mr. Becker had offered as a base for his query a letter from a commercial organization in Montreal characterizing two of the A. T. & T. film productions as "one of the most subtle and powerful forms of propaganda ever demonstrated before this club."

The pictures referred to were "A Modern Knight" and "Getting Together," the former a "plot film" depicting the uses of telephonic devices in apprehending criminals and recovering a kidnapped child; the other, Mr. Hamilton described as " an industrial picture with novelty appeal," showing the self-assembly of a telephone handset.

Mr. Becker argued and Mr. Hamilton denied that the issuance of "Getting Together" had been timed to mollify critics of the increased handset charge.

"It may have helped to do so, but such was not the purpose of its production," Mr. Hamilton insisted.

Submit Evidence to Correct FCC Record

Counsel G. L. Hurd, of the American Telephone & Telegraph Co., at the conclusion of the hearing on Thursday, June 4, before the Federal Communications Commission, in its investigation of the Bell System, declared that evidence submitted by the company to commission attorneys—which has not been included in the record—was "conclusive refutation" of charges made by Chief Accountant John H. Bickley for the commission's investigating staff, in connection with reports on phases of the investigation. These reports were submitted to the commisson in testimony presented in April.

Attorney Hurd said he had submitted the evidence at the request of FCC Special Counsel Samuel Becker and demanded that it be placed in the record. Objecting as to the effect of the data, Attorney Becker said he would put the information in the record when he had had opportunity to cross examine the parties who had prepared it.

Attorney Hurd stated the information he submitted refuted charges by FCC investigators that the large reduction in A. T. & T. employes from 1929 to 1935 was due to "mechanization" of the Bell System. Likewise, he said, he had submitted evidence correcting "inaccuracies" in the record with regard to the Graybar Electric Co.'s $500,000 investment in the WECO Corp.

Mr. Becker presented for the record a letter from Walter S. Gifford, president of A. T. & T. Co., retracting a criticism by him during his testimony of a calculation, made by Mr. Bickley, which Mr. Gifford said he thought was based on incomplete data.

"I find," Mr. Gifford wrote, "that Mr. Bickley had not omitted from his calculation (of the return on the gross book value and on the net book investment on telephone instruments sold by the A. T. & T. to the associated companies at the end of 1927) cost items which would materially affect the expense computations which he presented. I had in mind the practice of handling and accounting for telephone instruments on an individual number basis during my early experience in the business, which I now learn was discontinued some time prior to 1912.

"I am also informed by the controller that Mr. Bickley's expense figures in question include certain clerical, accounting and miscellaneous costs in connection with the ownership and handling of instruments for years prior to 1912, although I had understood Mr. Bickley to state that he had only included maintenance, depreciation and taxes."

GOULD

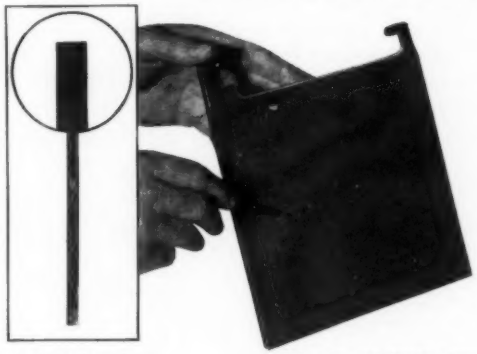
MODERN PLANTÉ BATTERIES

FOR ALL TELEPHONE APPLICATIONS

GOULD batteries of the Planté Type are applicable to any kind of telephone service, regardless of the severity of conditions. They are the highest development of the original Planté designs which have produced such outstanding performance records for a long period of years.

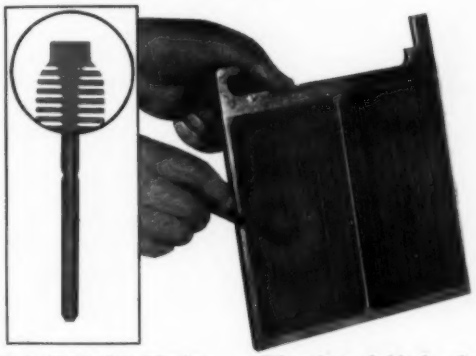
GOULD Planté batteries assure extra long life, extra reliability, extra performance, and the utmost in dollar value and economy. Four major features of construction, exclusive to **GOULD,** make these batteries outstanding. The illustrations and descriptions of these features will tell you why.

THESE FOUR FEATURES TELL THE STORY



End of blank with enlarged section at top.

Side view of single piece pure lead blank.

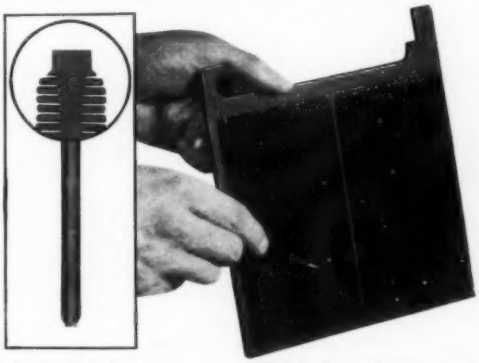


End of blank after spinning. Top section, about ¾ size, showing ribbed construction.

Side view of blank after spinning. Vertical ribs uniformly spaced.

1. ONE-PIECE PURE LEAD POSITIVE PLATE. Single piece flawless construction eliminates all the mechanical and electrochemical difficulties which prevail in composite plate structures. Homogeneous pure lead plates prevent local action, reduce internal resistance by increasing conductivity, assure greater strength and longer full-capacity life. Will not fracture in service.

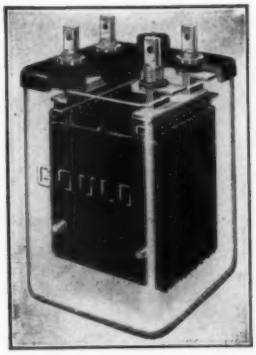
2. GOULD "SPUN PLATE PROCESS". The deep ribs on the one-piece pure lead positive plate are formed by the spinning or flowing process. An exceptionally large surface area is provided, to accommodate a corresponding volume of active material. The hardening effect of the spinning process, and the large supporting sections, assure more than ample mechanical strength.



End of finished plate, about ¾ size.

Finished positive plate ready for final assembly.

3. THE "GOULD C.P.", OR CHEMICALLY PURE PROCESS. This method produces an ideal formation of active material on the entire surface area of the spun positive plate structure. WITHOUT FILLING THE OPENINGS BETWEEN THE RIBS. By free circulation of electrolyte throughout space between all ribs the entire high inherent capacity of the active material is secured.



Type NPE-415 Planté Battery with cover cut back to show exclusive Gould Dual Suspension.

ELEMENT SUPPORTED FROM TOP OF JAR... NO STRAIN ON COVER

4. GOULD DUAL SUSPENSION. The far sides of both the positive and negative groups are carried by hard rubber channels which, in turn, are supported from the cross bar and plate assembly of the groups of opposite polarity. Each element is supported from projections extending over the opposite top edges of the glass jars, forming the exclusive GOULD Dual Suspension design, completely eliminating misplacement or breakage of the cell parts. Covers of hard rubber, the ideal material, are free from mechanical stress, hence no distortion throughout the service life of the cell.

Technical Bulletins available for all telephone applications. Write to

GOULD STORAGE BATTERY CORPORATION

1200 to 1250 Neoga Street, DEPEW, N. Y.

Most Westerly Telegraph Service Established

TELEGRAPH service established throughout Marshfield (Ore.) district properties of West Coast Telephone Co. in southwestern Oregon and northwestern California, with company appointed as agent for Postal Telegraph-Cable Co. Fifteen telephone exchanges operated in this fertile and productive area. Inauguration of telegraph service meets with hearty response

THE WEST COAST Telephone Co. has become agent for the Postal Telegraph Cable Co. in its Marshfield, Ore., district, which serves a vast area in the most westerly part of continental United States. This area, scarcely touched by the hand of man, extends for a distance of 300 miles along the Pacific Coast, taking in southwestern Oregon and northwestern California.

Rich in mineral resources and timber, and abounding in fish and game, this section of the country is traversed by a fine system of highways and is served by the Southern Pacific Railroad. It has long been served by an up-to-date local and long distance telephone service by the West Coast Telephone Co. and its predecessor company.

A total of 15 exchanges are operated by the West Coast Telephone Co. in its Marshfield, Ore., district. In addition, it operates 26 exchanges in other sections of the state, as well as two in California and 21 in Washington. General headquarters of the company are located in the city of Everett, Wash.

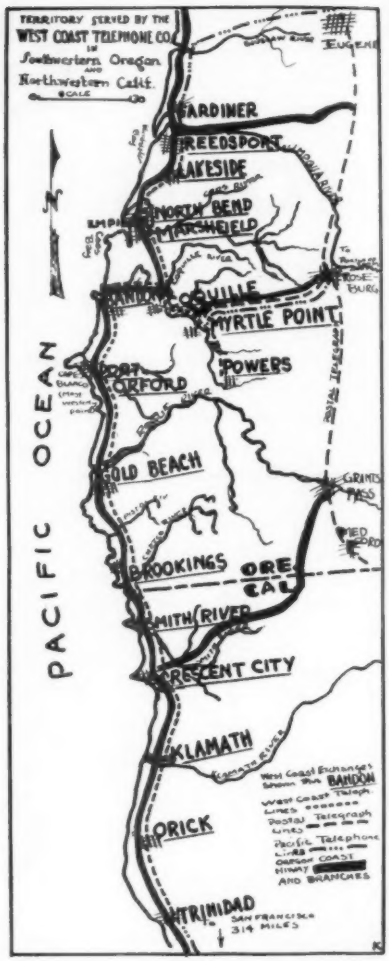
Many sections of the westerly Marshfield district are receiving far better telephone service than would be expected in a newly-developed territory. Six of the exchanges are equipped with full harmonic ringing and all of them are equipped with apparatus produced by Independent manufacturers. It has been the policy of the West Coast Telephone Co. to meet all reasonable demands for telephone service.

The West Coast Telephone Co. has also been rendering telegraph service by means of voice transmission of messages over its own telephone lines. Adequate toll service has been given by means of standard copper toll lines serving all settled portions of this area.

Since February 1 each West Coast exchange in the Marshfield district has become a full Postal Telegraph office, and all patrons of those offices are now enjoying direct telegraph, cable and radiogram rates to all Postal Telegraph, All-America cables and Mackay radio points.

Telegraph service is rendered by means of fast telegraph typewriters in the principal exchanges of the district. Smaller exchanges are served by voice transmission of telegrams to the larger toll centers. The Marshfield office of the West Coast Telephone Co. is a concentration office for the entire area.

A View of the Oregon Coast Highway in Curry County, Oregon, Showing Toll Line Construction of the West Coast Telephone Co. in a Picturesque Section.



Map Showing Territory Served by the West Coast Telephone Co. and Connecting Toll and Telegraph Lines.

How Telegraph Service Is Rendered

At Marshfield telegrams are transferred to the Postal system by means of simplex circuits superimposed upon telephone circuits between Marshfield and Roseburg, Ore. At that point the regular telegraph circuits of the Postal Telegraph-Cable Co. are reached. Telegraph business originating in that area is cleared through the Portland office of the Postal Telegraph system.

The public, it is reported, has responded very heartily to this new communication service. Before the service was inaugurated early this year, steps were taken to give it the advantage of every practical publicity effort. Announcements were enclosed with the subscribers' bills.

TELERING

ECONOMY ◆ RELIABILITY

Order One NOW for a 30-day Free Trial

ONLY ONE CONTACT!

PRICE $44.00 EACH
F. O. B. Elyria

Reliable ringing service is essential in providing satisfactory telephone service.

Use TELERING and provide the MOST reliable service at the LEAST cost.

Current Consumption negligible.

Positively No Radio Interference

Directly converts Commercial Alternating Current to Telephone Ringing Current.

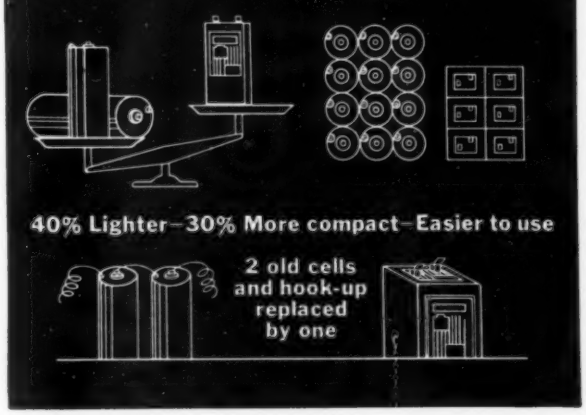
You can always depend upon our full co-operation and prompt service.

Sold by Leading Telephone Distributors

TELKOR, INC., ELYRIA, OHIO

A Feature of the BURGESS *Twin-Six Telephone Battery*

WEIGHT & VOLUME

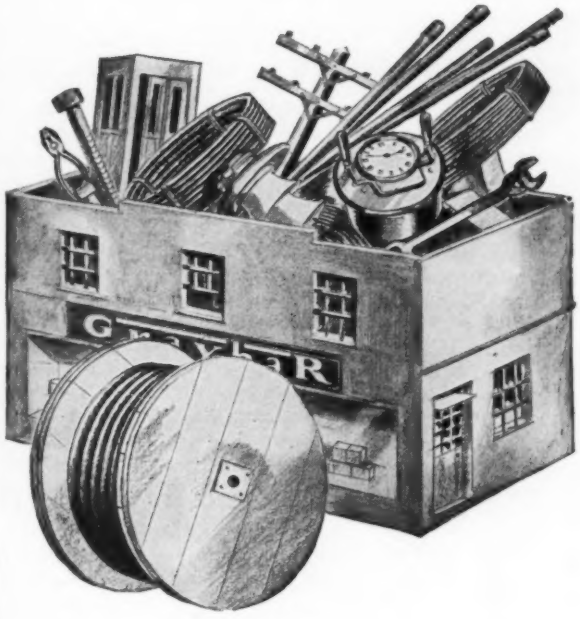


There is a streamlined battery as modern in design as a new aluminum passenger train. Like the passenger train, it is more efficient, weighs less, and runs farther than the older, clumsier types. Every feature of the Burgess No. 4F2J Twin-Six will cut your maintenance cost.

Price is 39c each in lots of 30. Order today from Inland Equipment Company (Distributors), Max F. Hosea, President, Indianapolis, Indiana.

The TWIN-SIX by

BURGESS



Cable

...and 60,000 other items

WHERE dependability counts—only the highest quality electrical products will do. One such quality product is Western Electric Lead Covered Cable—a cable whose dependability is insured by the most exacting of manufacturing standards.

But that's not all. Out of its roster of 60,000 electrical items Graybar is prepared to meet *any* need of a telephone industry. And behind *every* Graybar item stands the Graybar reputation for quality that goes back 67 years.

GraybaR

OFFICES IN 78 PRINCIPAL CITIES
EXECUTIVE OFFICES: GRAYBAR BUILDING, NEW YORK, N. Y.

Adequate display space was taken in all newspapers in the area affected. In addition, the company secured the cooperation of the editors in the publication of suitable stories in the regular news columns. Radio announcements were made concerning the new service; window posters and vehicle posters were used, and letters were sent to all potential commercial users.

As mentioned previously, the adaptation of these lines to the transmission of telegraph as well as telephone messages opens up the most westerly telegraph lines in the country. This is undoubtedly an important step toward the development of this rich but largely virgin country. This area, comprising all of Del Norte county and part of Humboldt county, Calif., as well as all of Coos and Curry counties and part of Douglas county, in Oregon, offers many attractions to those who would turn their eyes westward.

Center of Vast Resources

One-sixth of the standing timber of the United States—which includes the famous redwood, Douglas fir, Sitka spruce and Port Orford cedar—is directly tributary to this section. Great mills rear their stacks to the sky and the whine of the great saws cutting their way through the giant timbers can be heard day and night. The seacoast towns of this area are busily engaged in shipping their timber products to the four corners of the earth.

In the early days the Marshfield district was the scene of exciting gold rushes, and the black sands along the ocean are still worked by miners for the fine gold which they contain. Deposits of copper, chrome, nickel, cobalt and gold are still being worked. In addition, quantities of sub-bituminous coal, very rich in by-products, underlie a great portion of Coos county.

The rich bottom lands of the coastal river valleys of this country furnish splendid pastures for thriving dairy herds. Most of the milk produced is converted into cheese, which is shipped chiefly to California markets.

In addition to the railroad facilities in Coos county and lower Douglas county, a fine system of highways maintained by the Oregon State Highway Commission also serves this country. Chief in interest of these roads is the Oregon coast highway, which winds its way for 300 miles throughout the length of this section.

No engineering skill has been spared to make this road one of the most picturesque in America. It is one of the most important commercial and tourist routes on the Pacific Coast. The traveler along this highway is treated to a fast-changing panorama. At places the road is carved out of massive cliffs whose feet rest in white-capped breakers.

A marvelous seascape of the restless Pacific Ocean stretches before one as far as the eye can see. The road winds on through cool green canyons among the forest giants. Then it leads into pastoral scenes along winding stretches through the rich river-bottom dairy lands.

Scenes of man's industry next greet the eye where the highway leads past the busy lumber mills, canneries and industrial plants. Mountain views next treat the visitor where the road mounts the foothills of the Siskiyou Mountains. Grazing flocks and herds are always seen along the mountain sections of this highway, and the night traveler is often treated to the sight of deer or herds of elk dashing back under cover in the brush.

A unique feature of the Oregon coast highway has been its crossing of five of the large coastal rivers by means of free ferries operated by the state highway system. These streams are now being bridged by great steel and concrete bridges. The longest one of these, which crosses Coos Bay, will be more than a mile in length.

Adequate hotel facilities are available along this route, which the traveler always enjoys for its marvelous scenic beauty, its freedom from winter snow and ice and its coolness in summer.

A peculiarity of this territory served by the West Coast Telephone Co. was the fact that Curry county is without an incorporated city, a railroad, a paved street or sidewalk, as well as many other conveniences normally associated with a settled country. Until a few months ago, it was without telegraph service, the recent opening of Postal Telegraph service establishing the first telegraph line in that country.

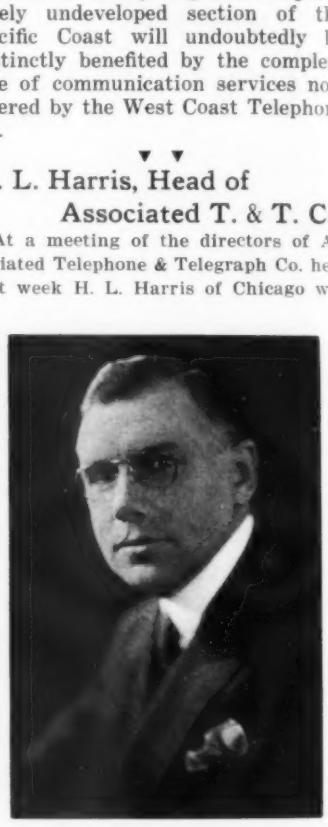
The West Coast Telephone Co. has had long experience in handling the telegraph business in the area in which it furnishes telephone service. In the past it has served as transfer agent for all communication companies. Many of the West Coast officials and employes have had considerable experience in handling the telegraph business as well as in the furnishing of telephone service.

On the basis of that experience, it is believed that its agency for the Postal Telegraph-Cable Co. in the Marshfield district will result in a great improvement in communications' service to the industries and residents of that area. The lumber, pulp, shipping, dairy and tourist industries of this young and comparatively undeveloped section of the Pacific Coast will undoubtedly be distinctly benefited by the complete line of communication services now offered by the West Coast Telephone Co.

▼ ▼

H. L. Harris, Head of Associated T. & T. Co.

At a meeting of the directors of Associated Telephone & Telegraph Co. held last week H. L. Harris of Chicago was elected president. Mr. Harris takes the place of A. F. Adams, who resigned as president and who was elected chairman. H. L. Gary was elected vice chairman, Martin Lindsay vice president, and G. L. Grawols treasurer.



H. L. HARRIS, President of Automatic Electric Co. and Affiliated Companies, Has Been Elected President of the Associated Telephone & Telegraph Co.

Mr. Harris, in addition to being president of the Associated company, is also president of Automatic Electric Co., American Automatic Electric Sales Co., and Automatic Electric Sales Co., Ltd., all of Chicago. He is also president of the Phillips Electrical Works, Ltd., cable, wire, and telephone manufacturers, with plants in Montreal and Brockville, Canada, and president of the Canadian Telephones & Supplies, Ltd., the head office of which is in Toronto, Canada.

▼ ▼

Minnesota Schedules Three District Meetings

The Minnesota Telephone Association has scheduled three district conferences in the southern part of the state as fol-

lows: Lanesboro on June 23; Waterville on June 24; and at Redwood Falls on June 25. F. C. Marvin, of Zumbrota, is president of the association, and J. C. Crowley, Jr., of St. Paul, secretary.

The subjects to be taken up at these district conferences will be the question of rehabilitating rural lines, inspection and advice to the officers of switched line companies, rural electrification, and such other subjects as the members care to discuss.

Managers serving switched line companies are urged to attend these meetings to go over the problems of inductive interference and hazards where communication and power lines more or less parallel and cross over.

Greatest Density Found in New York Area

On the southern tip of Manhattan, from Canal street to the Battery, an area of scarcely a square mile in the heart of New York City, there is probably the greatest concentration of telephones in the world. According to a recent survey made by the Downtown Information Bureau, the section has 169,311 telephones in service, 50,000 more than are to be found in any area of similar size in the city.

This concentrated business area is in many respects the business capital of the nation. It includes Wall street, the big stock and commodity exchanges, banking houses, the Custom House, the canyon of skyscrapers along lower Broadway, including the Woolworth Building and the American Telephone & Telegraph Building, headquarters of the Bell System.

Several blocks away are the headquarters of the New York Telephone Co., and also the headquarters of the big telegraph companies. Most of the municipal office buildings, including the New York City Hall, and local New York state government offices are concentrated in this area.

Telephone Traffic with Queen Mary Sets Record

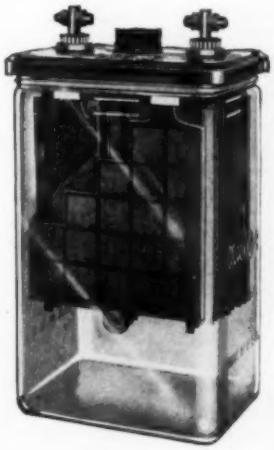
Telephone traffic on May 31, with the Queen Mary set a record for Bell System ship-to-shore service, with a total of 37 calls. A flood of calls again on the morning of June 1, indicated that the ship would establish another record, one call being put through after another, even after arrival at Quarantine. Up to noon, 20 conversations had been handled.

The number of telephone calls with the ship during its initial voyage is the largest number ever handled on an Atlantic crossing. In addition to the telephone service, more than 30 broadcast programs from the ship were handled over Bell System facilities.

"Service Enemy #1"

When lightning interrupts the electric service for your exchange, you can depend upon Exide Batteries to carry you through the emergency.

While electric companies can minimize the effects of lightning—they cannot prevent it from striking their lines. Frequently, telephone service interruptions result from lightning cutting off the normal supply of power to telephone exchange equipment. It is during such emergencies that Exide Batteries can be depended upon to carry the full load of your exchange. The operation of storage batteries is not interfered with by fluctuations or interruptions in the A.C. circuits. During such emergencies they will help keep the majority of your lines in service. There is an Exide Battery for every telephone job.



Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

Commission and Court Activities

FCC Examiners Report on A. T. & T. Teletypewriter

Examiner Seward, of the Federal Communications Commission, on Thursday, June 4, recommended to the commission that the American Telephone & Telegraph Co. be compelled to furnish private line teletypewriter service to Aeronautical Radio, Inc., at regular commercial rates.

Aeronautical Radio had complained that the A. T. & T. Co. refused to furnish it this service. The company likewise had asked that the A. T. & T. be forced to furnish the service at the same rate given the press and government agencies. The examiner recommended, however, that the A. T. & T. not be forced to provide this service at lower than commercial rates.

▼ ▼

FCC Denies Motions in Oklahoma Toll Case

The Federal Communications Commission on June 3 denied, without prejudice, the motion of the Oklahoma-Arkansas Telephone Co., filed May 29, 1936, to strike the answer and cross-petition of the Southwestern Bell Telephone Co., filed March 13, 1936; and also a motion of Southwestern Bell to strike from the petition all allegations having to do with Bell's installation of a switchboard at Poteau, Okla. in January, 1928, and all allegations having to do with alleged damages of the Oklahoma-Arkansas Telephone Co.

The hearing in this case, which was originally set for July 6 has been postponed to October 5. It will be held before an examiner at Hotel Goldman in Fort Smith, Ark.

▼ ▼

FCC Rejects Application for Competing Radio Circuit

The Federal Communications Commission on June 4 issued a ruling denying the application of the Mackay Radio & Telegraph Co. to establish a commercial radio circuit between New York and Oslo, Norway, in competition with RCA Communications.

The commission made clear in its ruling that it believes this country's measure of control of world radio communications would be jeopardized if permission were granted to two companies to establish competing circuits where financial returns do not appear to warrant such a step.

As specific reasons for its decision the FCC declared:

"(1) That radio and cable facilities between the United States and Norway are adequate, competition is keen and there is no complaint of the service rendered;

(2) That the proposed new circuit would not offer new or improved service, reduce rates or create traffic;

(3) That the proposed new circuit, while increasing the revenues of the applicant, would decrease the revenues of all other established competing carriers, and would decrease the total revenues of the American-owned companies;

(4) That the increase in applicant's revenue is not shown to be necessary for the continued operation of applicant or of its associated companies comprising the International System;

(5) That the proposed circuit would result in the practical withdrawal of an associated cable company from competition."

The commmission further stated that:

"Changes in the division of tolls between American carriers and foreign administrations or companies, which diminish the income of the American carriers as a whole without reducing rates or improving service, and especially without the additional patronage which can be expected from such a reduction in rates or improvement in service, must be weighed against applicant by a commission charged with the duty both of the development of a nation-wide and world-wide wire and radio communication service and with the duty of seeing that the rates for that service are reasonable."

Commissioner Irvin Stewart made clear, however, that future cases would be decided on their individual merits.

▼ ▼

Common Stock Sold of Ohio Central Group

During April the common stock of the Ohio Central Telephone Corp., with headquarters at Wooster, Ohio, which was formerly owned by a group of Chicago men, was sold to Ohio telephone interests. H. B. Battles of Wooster, G. H. Eck and F. L. Harper of Chicago, withdrew from the company and were

Friendship

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

"HE WHO WOULD have friends must show himself friendly." How true, especially in the telephone industry. When we win our customers' friendship it is so much easier to serve them than when the personal note is missing.

We have heard so much in one way or another about being thoughtful, courteous, and accurate in our service to customers that I sometimes wonder if we realize the dividends these things pay. Yes, they are worth real money to our company besides winning lasting friends for it—which is better still!

These telephone users of our service are hometown citizens and their families. Our lives all overlap in more ways than we realize. We serve them at Central and they serve us in their stores, light and power companies, garages, laundries, and other places too numerous to include here.

We should not want their friendship for mercenary reasons only, as much as we need it along with their patronage. Our citizens' votes influence franchise decisions in our company's favor or otherwise, depending on its standing in the town. These same citizens elect men to the legislatures, city councils and other public offices. These citizens are property owners in the home town. Because our company's property is not confined to its building but also occupies the streets with poles and wires, it frequently has to gain permission to set poles, trim trees, etc.

If our company stands high in a community it is because of its straight-shooting business policies and the spirit of service and friendliness every employe puts into his and her customer contacts.

MORAL: "Friendship is love without either flowers or veil."—Hare.

replaced by individuals selected by the new owners of the common stock.

This change leaves the newly reorganized board of directors as follows: C. I. Correll, Wooster; R. L. Griggs, Millersburg; C. V. Haney, Dayton; George B. Quatman, Lima; C. J. Poole, Wooster; Phillips B. Shaw, Summit, N. J., and Curtis M. Shetler, Canton.

In addition to the foregoing changes in the board of directors, A. M. Crichton of Wooster, formerly in charge of maintenance and plant work, was transferred to Lima where he will do some special work for several other companies as well as for the Ohio Central company. The vacancy created by Mr. Crichton's transfer has been filled by Guy W. Brentlinger, formerly of Lima, who is now located at the company's general office in Wooster.

▼ ▼

Large Nebraska Companies Ordered to File Data

The Nebraska State Railway Commission has issued an order that all class A and class B companies subject to its jurisdiction—meaning those with annual incomes of $50,000 or more—and operating in other states and filing with the Federal Communications Commission a consolidated system report, shall file with it a supplemental report in the form of additional data, with segregation of plant and operating statistics intrastate for Nebraska, confined to the following schedules in annual report Form M:

Investment in telephone plant.
Analysis of credits for plant retired during year.
Depreciation reserve.
Analysis of charges made during year to depreciation reserve on account of the retirement of depreciable telephone plant.
Bases of charges for depreciation.
Operating revenue accounts.
Operating expense accounts.
Operating taxes.
Compensation of officers, directors, etc.

It was also ordered that all class A and class B companies subject to its jurisdiction and operating two or more exchanges in the state, be directed to file a supplemental report showing the number of telephone stations at each exchange, classified as business, residence, rural and switched.

The commission finds that, for the purpose of proper regulation of intrastate business, these companies subject to its jurisdiction and operating in other states and filing with the FCC the consolidated system report should file this additional data. If it cannot be segregated for Nebraska, the allocation formula used should be stated. The order was prepared by Commissioner F. L. Bollen, who said that it was principally intended to have the commission supplied with fuller information upon which it may be able to make its own depreciation studies.

The commission order sets out also that the Federal Communications Commission having continued in effect until further order the effective date of "Uniform System of Accounts, issue of June 18, 1935," effective January 1, 1936, and "Uniform System of Accounts, First Revised Issue," effective January 1, 1933, the state commission, in cooperation with the Federal Communications Commission should not proceed further with this investigation until the further

Answers to Traffic Questions on Page 20

1. This code means, "No circuit available, call order left."
2. Yes. This entry indicates that the ticket was passed to the distant toll center.
3. No.
4. Yes.
5. Say, for example, "I am sorry, I cannot reach the (calling place) party now, but they expect him at (or in) (time)," and add, "I will call you."

No. 7 AERIAL WIRE PROTECTOR

Results alone are responsible for the popularity of this No. 7 Arrester. On open leads, the No. 7 will drain induced static from circuits without permanently grounding the line.

Installed three or four poles ahead of a protected terminal, the No. 7 will shunt to ground high potentials that ordinarily would blow fuses and open circuits.

This No. 7 has a capacity of ten wires. It is a typical Cook product, made of the best materials possible from the hot galvanized, rust-resisting iron base and bracket, bakelite insulation, Phosphor Bronze springs, Everdur studs, nuts and washers and the zinc hood. The No. 7 is equipped with True Gap Dischargers that will not permanently ground the line.

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Conduit—Creosoted Pine

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SPECIFY—

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Overhead and Underground Construction
Manufactured at
CHEHALIS, WASH. NEWARK, N. J.
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ACORN
DROP WIRE

Independent telephone companies may now demand and expect to receive insulated drop wire fabricated to meet rigid specifications. Every coil of Acorn insulated drop wire is thoroughly inspected before shipment. It is the most economical drop wire because it is especially constructed to reduce maintenance costs on outside drops, to a minimum.

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order of the FCC relative to the effective date of the system of accounts as of June 1, 1935.

Until further order of the state commission, therefore, all class A and class B companies subject to its jurisdiction, will continue in effect the first revised issue effective January, 1933, and for the year 1935 will file with the commission a copy of the report filed with the FCC and within the time required by that commission.

▼ ▼

Exchange Rates Adjusted Following Rehabilitation

The Rochester Telephone Corp. on May 27 filed a schedule of rates with the New York Public Service Commission, effective June 1, in the territory served by the former Perry Telephone Co. which was acquired by the Rochester company in 1931. The territory includes the village of Perry in Wyoming county where there are about 1,000 stations.

When the Rochester company acquired the property of the Perry company it was in poor condition. Since that time the property has been completely rehabilitated and a new central office erected at Perry. The rates charged by the former Perry company were unbalanced in that there was little difference between business and residence rates. The rates now filed correct this condition by increasing business rates and lowering residence rates except those for rural service.

In every case the charge for the various classes of service is from 25 cents to 50 cents per month lower than those of the New York Telephone Co. for the same service in exchanges of similar size.

The increases in business rates affect 118 subscribers or about 14 per cent and averages 41 cents per subscriber per month. The rates of 481 or 56 per cent are not changed, and the rates of 253 or about 30 per cent are decreased an average of 25 cents per month. The increases total $580 a year and the decreases $759 a year, making a net annual saving to subscribers of $179 annually.

▼ ▼

Handset Service Additional Cost Recognized

The Sharon Telephone Co. of Millerton, Dutchess County, has filed a revision of rates with the New York Public Service Commission which provides that the monthly charge of 15 cents for handset telephone be eliminated after the handset telephone has been in use by the same subscriber for a continuous 26 months' payment period. The company has about 700 subscribers and operates an exchange at Sharon, Conn., in addition to its exchange at Millerton. The charge for handset telephones was reduced by the Sharon company from 25 cents to 15 cents per month on January 1, 1935.

The commission denied the company's application for special permission to put the revised rate in effect on less than statutory notice and sent a letter to the company which read in part as follows:

"This commission believes that there are certain practical and fundamental objections to such an arrangement. All of the evidence on the subject before the commission indicates that there is a slight additional cost in furnishing telephone service with handsets, as compared with upright desk sets and wall sets. These additional costs consist principally of additional maintenance and depreciation expenses.

Such expenses are continuing and do not cease at the end of a three-year period. It appears that these costs should either be paid as an additional charge by the subscribers having handsets, or when the handset has become the predominant type of instrument the additional costs should be absorbed in the general rate structure.

Of course, there is no evidence before the commission to show just what the additional handset costs of your company are. In the case of the New York Telephone Co., it was found to approximate 15 cents per month. If your additional costs are less than 15 cents per month, you may revise your tariff so as to provide a handset rate consistent with such costs, or you may discontinue the handset charge entirely."

▼ ▼

Report on Petition to Increase Rates

Secretary Knisley recently certified a report to the Ohio Public Utilities Commission upon the application of the Northwestern Ohio Telephone Co., filed September 25, 1935, for authority to increase its rates at Wauseon and Tedrow as follows:

Business independent from $2.50 to $4.00 net per month; business two-party from $2.25 to $3.50; business rural from $2.50 to $3.00. Residence independent from $1.50 to $2.50; residence five-party from $1.25 to $1.75.

The report states that the company pleaded that under the existing rates the revenues amount to $30,851.32, expenses $20,830.89, and depreciation charges $13,275.31, resulting in a deficit of $3,244.88. Including a 10 per cent loss of stations and regrading of service, it estimated the exchange service revenue under the new rates at $29,940.30. The company's value of the

property present is set forth at $281,522.11.

The commission's report ascribes a present value of this property of $203,545.15. It also adjusts revenues and disbursements under the new rates to show:

Total operating revenues	$39,062.38
Total operating expenses	19,611.84
	$19,451.54
Depreciation	8,074.19
	$11,377.35
Taxes	1,837.15
	$ 9,540.20
Federal income tax	689.91
Net income	$ 8,850.29

This is equivalent to 4.343 per cent of the commission's valuation.

▼ ▼

Ohio Supreme Court Decision Expected in Bell Case

A decision in the Ohio Bell Telephone Co. rate case is expected before the Ohio Supreme Court recesses for the summer about July 1. The court has had the case under study for 18 months and if it decides against the telephone company, thousands of subscribers will receive refunds totaling approximately $12,000,000.

The state supreme court has since January 29, 1935, been considering the state-wide rate case involving an appeal from the Ohio commission's reduction order. It has been pointed out by attaches of the court, and the clerk's office, that the custom of the court has been to decide all submitted cases before starting the summer recess. If this custom is followed the Ohio Bell case should be disposed of by July 1.

▼ ▼

Pacific Bell Sues for Tax Refund of $19,068

A test of new public utility tax legislation may be the result of six suits filed May 13, by the Pacific Telephone & Telegraph Co. in superior court of Santa Rosa, Calif., seeking recovery of taxes amounting to $19,068.58 which were paid under protest last December. It is charged that the California Board of Equalization failed to make assessments within the time prescribed by law and that all assessments on the company's property and improvements were made arbitrarily.

The suits are directed at Sonoma county, Santa Rosa, Petaluma, Sonoma, Sebastopol and Healdsburg. The telephone company, through Attorneys Pillsbury, Madison and Sutro of San Francisco, claim that all of the taxes were paid under written protest on the ground that the assessments were void, in part, because of discrimination against the corporation by the board and assertedly deliberate disregard for the assessments of other property in the same zone.

Sonoma county is named defendant in the largest of the six suits, the company seeking to recover $14,598.64 which was paid the county in taxes for the fiscal year ending June 30, 1936. The suit points out that the county tax collector demanded $27,701.89 in full payment of taxes for that period and that the company paid one-half the real property tax and all of the personal property tax levied by the state board.

Return of $2,752.10 is asked of the city of Santa Rosa. Other returns asked are as follows: Petaluma, $942.67; Sebastopol, $444.92; Sonoma, $198.74; and Healdsburg, $131.51.

The suits are identical with other actions recently brought by the telephone company in Marin, Napa, Mendocino, (TELEPHONY of June 6) Alameda and other counties in the state. In each instance the plaintiffs contend that the assessment of real estate and personal property, including telephone office and headquarters buildings, poles, wires, telephone and telegraph apparatus and equipment, is excessive.

The new state law, giving the tax from public utilities back to the cities and counties, provides that the assessments should be made before the first Monday in August. It is claimed that in each instance cited in the six suits the assessments are illegal because they were not made before that date.

▼ ▼

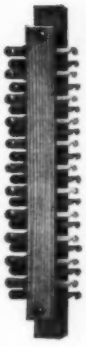
Rates Increased in Order to Improve Plant, Service

The directors of the Farmers Mutual Telephone Co., of Dysart, Iowa, recently voted to raise the cost of service for all telephones in town and country 50 cents per year for the ensuing year to finance the cost of a new cable to give better service to telephone patrons of the southwest Dysart residential district. The old cable now in service is badly worn in places, and in wet weather transmission is bad, with considerable crosstalk. The cost is estimated at around $1,000.

Under the new schedule of switching fees decided upon, residence telephones on the farms and in town will be raised from $5.50 to $6 per year, and business telephones in town from $6.50 to $7. Even with the increase, there are few towns in Iowa with telephone rates as low or lower than Dysart, and among mutual, non-profit telephone companies, the service maintained at Dysart is probably well above the average.

The directors re-elected the officers at a recent meeting. D. F. Harrington is president; A. S. Gnagy, vice-presi-

TERMINAL STRIPS



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Twin screw binding posts with one soldering washer mounted on hard rubber. Sizes 5½ to 26 pair.

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Rope and Its Uses

One of the important items useful in the construction of outside telephone plant is ordinary rope. Rope is used for handlines, slack blocks, "pulling in" lines, and many other similar applications. It is essential that the outside construction man have some knowledge of the various knots and hitches which can be employed when working with rope.

Ordinary hemp is the fiber in common use for rope. Ropes consist of a few fibers of hemp twisted together to form a yarn, and the yarn is then twisted together to form what

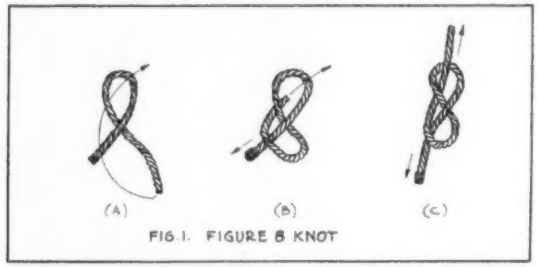

FIG. 1. FIGURE 8 KNOT

is known as a strand. Three of these strands twisted together form what is referred to as a hawser, and hawsers are twisted together to form the cable or rope. Small ropes have as many as several hundred individual hemp threads, and it is the friction of these threads against one another which gives a rope its strength.

Care of Rope

Good manila rope will last a long time if given a reasonable amount of care. Some of the rules that should be observed in handling and using rope are as follows: (1) Be careful not to drag rope for any distance over the ground, as this wears away the fibers and weakens the rope. (2) In working with a coil of rope, the coil should be laid flat on the floor or ground and the rope removed from the center of the coil rather than from the outside.

(3) Rope which becomes wet should not be stored away in that condition. It should be laid out to dry; otherwise it may tend to rot, which will greatly reduce its strength.

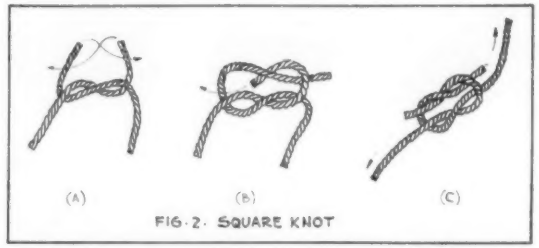

FIG. 2. SQUARE KNOT

(4) Ropes which are used for important applications, such as the raising of heavy weights, or for supporting men at a considerable distance above the ground, should be periodically inspected for wear and weak spots. Take no chances with worn rope but replace it at the slightest signs of weakness.

Rope Knots and Hitches

When working with rope knots, there are three parts to be considered: The *standing part* or long, unused portion; (2) *the bight*, which is the loop created when the rope is turned back over the standing part; and (3) *the end*, which is the part used in threading a knot.

There are a large number of different types of knots, each of which has its own particular merits. Some of the most

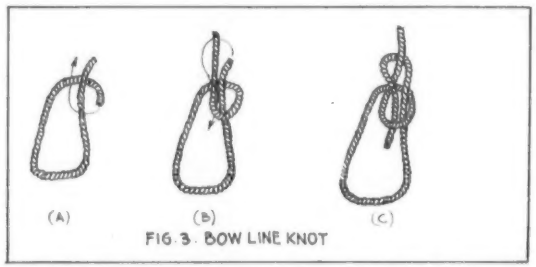

FIG. 3. BOW LINE KNOT

popular knots are shown in the accompanying diagrams. One of the simplest is known as the *figure eight* knot. As will be seen from Fig. 1, this knot is easily made by forming a loop with the end, and then swinging the end of the rope around the body and back through the loop. This type of knot is

often used by construction men to keep a rope from pulling through a ring or block, thus necessitating a rethreading operation.

The Square Knot

Another popular knot, useful in temporarily fastening two ropes together, is the *square knot*. As will be seen from Fig. 2 this knot consists of two simple knots, tied one over the other. The principal advantage of this knot is that it will not slip or jam and is easy to untie.

The Bowline

Another useful knot for the construction man to know is the bowline. The bowline knot permits making a noose or loop of any desired size which will not slip or pull. To make this knot, the loop is adjusted to the desired size as shown in Fig. 3-A. The end of the rope is then threaded through the bight as shown. The end is then passed around the standing part of the rope and back through the bight

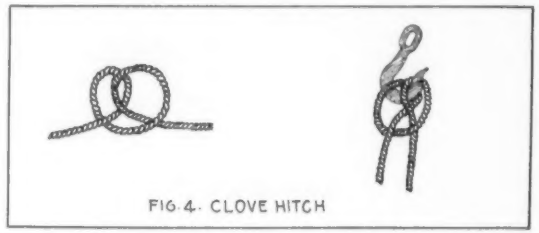
FIG. 4. CLOVE HITCH

after which the knot is tightened by pulling on the end of the rope.

The Slip Knot

The familiar *slip or running knot* as shown in Fig. 3-B is sometimes useful. With this type knot, the harder it is pulled, the tighter the loop becomes.

The Clove Hitch

A hitch useful for securing a rope to a lifting hook is shown in Fig. 4. This is referred to as the *clove hitch*. The hitch is easily made by forming two loops or bights side by side, which are placed over the hook and then pulled taut. This hitch is also useful in fastening objects together and is extensively used by builders.

Obituary of James C. Joslyn

James C. Joslyn, Who Passed Away Suddenly on June 6, As He Appeared 25 Years Ago.

JAMES C. JOSLYN, of Sycamore, Ill., veteran Independent telephone man with 41 years of continuous service to his credit, passed away suddenly on June 6 at his home at the age of 74. Since 1927, he served as president of the DeKalb-Ogle Telephone Co. Prior to that time he was secretary and general manager of the predecessor company for many years.

Mr. Joslyn was born in Sycamore in April, 1862. After graduating from the local high school, he became a book and stationery retail merchant. After 21 years of activity in that business, he sold his interest in the spring of 1912.

He was one of the earliest Independent telephone men of his native state, becoming connected with the DeKalb County Telephone Co. in 1895. Two years later he was made a director of the company, being also chosen as secretary, treasurer and general manager. The company at that time operated but one exchange, that at Sycamore. During the ensuing year lines were extended to all of the towns of DeKalb county and by the summer of 1913, exchanges had been established in 13 towns, with one telephone for every six inhabitants.

At the present time the company operates 7,382 telephones with exchanges at these points: DeKalb, Esmond, Genoa, Hinckley, Kingston, Kirkland, Lee, Lindenwood, Malta, Maple Park, Mount Morris, Oregon, Rochelle, Shabbona, Steward, Sycamore and Waterman.

Mr. Joslyn's son, H. A. Joslyn, has served as secretary and general manager of the company since 1927.

dent; and Miss Christian Bloss, secretary-treasurer.

There are 29 farm lines served by the Dysart exchange, and each has one representative on the board of directors. The town telephone users are represented by three directors.

There has been another increase the past year in number of telephone users. The Dysart exchange now serves 575 telephones, of which about 300 are in the city.

▼ ▼

Commissioner Payne Reappointed to FCC

George Henry Payne of New York was reappointed by President Roosevelt on June 3 for a term of seven years on the Federal Communications Commission. Commissioner Payne is a member of the telegraph division of the commission. The appointment was confirmed by the Senate on June 8.

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Indiana's Unemployment Compensation Law

Indiana's new unemployment compensation measure, passed the last day of the special legislative session, ventures into an entirely new field of "insurance against unemployment" as affecting the trade and its employes. Collection of payroll taxes was begun April 1 of this year, but benefits to persons losing their jobs can not start until April 1, 1938. The system applies only in cases of employers of eight or more persons.

For the rest of this year, beginning April 1, employers must turn over to the state treasury in monthly payments, 1.2 per cent of their total payrolls. Next year their contributions will be 1.8 per cent; in 1938 and 1939 they will pay 2.7 per cent, and thereafter contributions ranging from nothing up to a maximum of 3.7 per cent, depending on the condition of each employer's reserve account.

Meanwhile, employers must continue to pay the federal government, in addition, one-tenth of 1 per cent this year, two-tenths next year and three-tenths thereafter. Five-sixths of the employers' and employes' contributions to the state are held in separate accounts for

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Indiana Steel & Wire Company
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each employing firm, the other sixth going to a general state pool.

Employes' contributions, not to exceed 1 per cent of wages, start January 1 next year. Their contributions will be nine-tenths of 1 per cent next year and 1 per cent in the next two years, and then may drop if their employers' tax should fall below 2 per cent, if adequate reserves have been built up.

On losing his job, the employe is entitled to his former weekly wage, but benefits in no instance shall exceed $15 a week nor fall below $5. Benefits continue to a person for a period of one week of benefits for each four weeks the person has been employed in the preceding two years, but with a maximum of 15 weeks.

A person out of work because of a strike will not be eligible for benefits, but employes out because of a plant lockout are eligible. If a strike has been fomented by an employe none of the employes of the same craft or group is eligible. Any person thrown out of work by a strike, but who is not a member of the striking group and is not participating in the strike, is eligible for benefits.

▼ ▼

Commission Rulings and Schedule of Hearings

Federal Communications Commission Washington, D. C.

June 3: In the case of the Oklahoma-Arkansas Telephone Co. against the Southwestern Bell Telephone Co., the Telephone Division denied, without prejudice, the motion of the Oklahoma-Arkansas company filed May 29 to strike the answer and cross-petition of the Southwestern Bell filed March 13, 1936; and also motion of the latter to strike from the petition all allegations having to do with the Bell's installation of a switchboard at Poteau, Okla., in January, 1928, and all allegations having to do with the Oklahoma-Arkansas company's alleged damages.

Illinois Commerce Commission

June 9: Hearings in Chicago on complaint of Henry A. Proesel, et al., against the Illinois Bell Telephone Co. as to rates for telephone service to adjacent exchanges to complainants as subscribers in the county of Cook. Amended complaint filed.

June 9: Oral argument in Chicago on complaint of the Clearing Industrial Association, et al., vs. the Illinois Bell Telephone Co. as to unjust and unreasonable charges for telephone service by the Illinois Bell to complainants in the Chicago exchange area.

Ohio Public Utilities Commission

June 1: Upon application, Ohio Bell Telephone Co. authorized to file schedules creating a new Victory exchange of the northern portion of the present North Royalton exchange area and portions of the Parma Heights and Broadview villages and the city of Parma, wherein a community of interest different from the remainder of the present service has been found. The exchange rentals will remain the same.

Oklahoma Corporation Commission

May 27: Order issued reducing telephone rates of the Oklahoma Telephone Corp. in Barnsdall, effective June 1.

Pennsylvania Public Service Commission

May 29: Hearing on complaint of the Leader Telephone Co., of which Francis Hatmaker is owner, against Mrs. John P. Burke, doing business as the Suscon Telephone Co. It is alleged that Mrs. Burke furnished service to subscribers in Pittston township without first having obtained a certificate and with erecting poles and wires in Bear Creek township which interfere with the service of the Leader Telephone Co.

It was brought out in the testimony that Mr. Hatmaker had 11 subscribers to his telephone service and that Mrs. Burke had nine subscribers. The subscribers to both systems reside in Pittston, Jenkins and Bear Creek townships.

West Virginia Public Service Commission

June 23: Hearing on application of the Independent Telephone Co., of Slanesville, for permission to change its rates. The company serves subscribers in Hampshire and Hardy counties.

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Buyer's Weekly Guide

A list of firms and companies offering equipment, supplies or services for operating telephone companies

ADDING MACHINES

Burroughs Adding Machine Company, Second Blvd., Detroit, Mich. — Adding, Bookkeeping, Calculating, Billing and Accounting Machines, Electric Carriage Typewriters, Standard Typewriters, Operator Correct-Posture Chairs. Burroughs machines are in use today in hundreds of progressive telephone companies throughout the country.

BATTERIES—DRY CELLS

Burgess Battery Co., Freeport, Ill.—Burgess Flashlights and Uni-Cel Flashlight Batteries—for dependability and service. The Burgess Twin-Six Telephone Battery—a 2-volt unit designed to replace two No. 6 cells, with longer life, lighter weight, smaller size and a leakproof case. The Burgess Little-Six—replaces the old type No. 6 cell, is smaller and lighter, will not ooze or bulge, has all the electrical capacity of the standard No. 6 cell.

National Carbon Company, 30 E. 42nd St., New York.—"Columbia" Telephone Dry Batteries; "Eveready" Flashlights, Flashlight Batteries and Long Life Dry Cells, "National Pyramid" brushes, carbon, graphite and metal graphite for motors, generators and rotary converters. "Eveready" Prestone anti-freeze; "Eveready" Rustone rust preventive; and "Eveready" Air Cell telephone operators' transmitter batteries.

BATTERIES—STORAGE

The Electric Storage Battery Company, Allegheny Ave. and 19th St., Philadelphia, Pa.—Exide Storage Batteries. Branches: Boston, New York, Rochester, Philadelphia, Pittsburgh, Washington, Atlanta, Cincinnati, Cleveland, Detroit, Chicago, Kansas City, Minneapolis, St. Louis, Denver, San Francisco and Seattle.

Philco (Battery Division) Tioga and C Streets, Philadelphia, Pa.—Philco Flote in Steel-Glass Storage Batteries for P. B. X. and central office operation. Your old batteries will command a liberal allowance toward any Flote in Steel-Glass Cell from 10 A.H. to 1056 A.H. Write now for catalog ...it will tell you the complete story of Flote in Steel-Glass—the finest of telephone batteries.

BATTERY CHARGING EQUIPMENT

General Electric Company, Bridgeport, Conn.—Tungar battery chargers. G-E pole line hardware. Cable filling compound.

North Electric Mfg. Co., Galion, Ohio. — Self-regulating battery chargers.

CABLE—LEAD ENCASED

Kennecott Wire and Cable Company, Subsidiary of Kennecott Copper Corporation (formerly American Electrical Works) Philipsdale, R. I.—Paper telephone cable, switchboard cable, bare copper wire. Chicago Office: 20 N. Wacker Drive; Cincinnati: Traction Bldg.; New York: 100 E. 42nd St.

British Insulated Cables, Ltd., Surrey House, Embankment, W. C. 2, Factory: Prescot, Lancashire, England.—Telephone cable of all sizes and capacities

General Cable Corporation, 420 Lexington Ave., New York, N. Y.—Paper telephone cables of standardized manufacture for over forty years. Weatherproof and insulated copperweld drop wire.

Eugene F. Phillips Electrical Works, Ltd., Montreal, Can.—For any type of wire or cable used in telephone, telegraph or power work get in touch with "Phillips." Manufacturers of bare and insulated copper wires, rubber insulated wires, enameled wire, magnet wire, telephone cables, power cables, switchboard cables, flexible cords, copper rods, etc.

CABLE RINGS

National Telephone Supply Company, 5100 Superior Ave., Cleveland, Ohio.—National Cable Rings, National Splicing Sleeves, Non-Breakable Messenger Cable Hangers, Marlin and Swisher Cable Hangers and Custom Galvanizers. National cable rings are practical because they are two-way,—they allow the cable to be pulled in either direction. National sleeves make secure the weakest points in the line. If it's a splice—make it a National.

CABLE TERMINALS

Cook Electric Company, 2700 Southport Ave., Chicago, Ill.—Protective Pole Cable Terminals, Unprotected Pole Cable Terminals, central office protection, lighting arresters, sleeves, fuses.

Reliable Electric Company, 3145 Carroll Ave., Chicago, Ill.—Complete line of cable terminals, telephone and switchboard protectors, sleeves, fuses, solderless wire connectors and specialties.

CORDS, CABLE AND WIRE

Lenz Electric Manufacturing Co., 1751 N. Western Ave., Chicago—Established 1904—telephone and switchboard cords for all makes of equipment, braided and lead-covered telephone cable, flame-proof jumper wire, interior telephone wire, switchboard wire.

CORDS AND WIRE

Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago—Telephone and Switchboard Cords, Flame-proof Jumper Wire, Switchboard Wire, Interior Telephone Wire. W. L. Runzel, President, has devoted over 40 years to the making of fine telephone cords.

ELAPSED TIME RECORDERS

Calculagraph Company, 50 Church St., New York, N. Y.—Calculagraph is the world's standard elapsed time recorder and gives you toll records printed with elapsed time to the second. Both spring driven and electric motor models are available.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

International Creosoting and Construction Company, Galveston, Texas—Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

Jordan Bros. Lumber Co., Box 84, Norfolk, Va.—Virginia White Cedar Poles. Plain or charred and creo-treated butts.

MacGillis & Gibbs Company, Milwaukee, Wis.—Northern White and Western Red Cedar Poles. Plain or butt-treated. Immediate quotations on request

Michigan Pole & Tie Company, Newberry and Grand Rapids, Mich. — "Poles with Character." Northern White and Western Red Cedar. Strategically located yards, Minneapolis, Minn., and Reed City (Lower Michigan), insure quick deliveries.

H. Sigalet & Company, Ltd., Lumby, B. C., Canada — Western Red Cedar Poles. Plain or Butt treated.

Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or Butt treated.

SUPPLIES, SWITCHBOARDS AND INSTRUMENTS

American Automatic Electric Sales Company, 1033 West Van Buren Street, Chicago, Ill.—Public Automatic Telephone Systems, Private Automatic Telephone Systems, Central Battery and Magneto Manual Telephone Switchboards, Remote Control Switchboards, Telephone Instruments of all types, Battery Eliminators, Charging Equipment, Signaling and Control Apparatus, Cords, Wires, Cables, Monotype Copperweld Drop Wire, and a complete line of construction materials and supplies.

Automatic Electric Company, 1033 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Telephones, relays, signaling and control equipment.

Automatic Electric Company, Ltd., Milton Road, Edge Lane, Liverpool, England.—Automatic Telephone Equipment.

Automatic Electric Sales Company, Ltd., 1027 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Manual Telephone Equipment, telephones, storage batteries, wire, cable, poles, etc.

Kellogg Switchboard & Supply Company, Adams & Aberdeen Sts., Chicago, Ill.—Engineers and designers, manufacturers and suppliers of complete equipment for telephone exchanges and communication systems. Manufacturers of "Master-built" Common Battery, Magneto and PBX Switchboards, "Masterphone" Telephone Instruments, and a complete line of telephone supplies, including bronze drop and interior wire.

North Electric Manufacturing Company, Galion, Ohio—Machine switching telephone systems. Automanual and Automatic. "All-Relay" Switching Apparatus (Dialless and Dial Control). Unattended Satellite Systems. Dials (automatic).

Siemens Brothers & Company, Ltd., Woolwich, England—Automatic and Manual Telephone Equipment.

Stromberg-Carlson Telephone Manufacturing Company, 100 Carlson Road, Rochester, N. Y. — Telephone apparatus of all kinds, switchboard cords, cable and general telephone supplies.

TOOLS

Crescent Tool Co., Jamestown, N. Y.—CRESTOLOY Pliers, Curved Needle Nose Pliers, Heavy Diagonal Cutting Pliers, Linemen's Side Cutting Pliers, End Cutting Nippers, Crescent Hack Saws.

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WANTED TO BUY

WANTED—Kellogg 1000 ohm 30-42-54-66 cycle harmonic ringers and sterling 3½-ohm wire wound heat coils. Address P. O. Box 1010, Portsmouth, Ohio.

MISSOURIANS DISCUSS SERIOUS PROBLEMS

(*Concluded from page 20*)

Gang" comedy of the movies, was among the visitors introduced to the convention.

The resolutions committee was then called upon to render its report. Thanks and appreciation were extended to those participating on the program. A resolution was dedicated to President Houck McHenry and regret expressed at his inability to be present.

A resolution extended sympathy to E. F. Carter, of Columbia, because of his illness and because of his loss in the death of Mrs. Carter.

Another resolution paid tribute to the late G. W. Schweer, of Clinton, and mention made of his pioneer work in the interests of the telephone industry.

The resolutions were adopted.

The chairman of the nominating committee was called upon to report. The officers elected for the following year have been previously named. The following were elected to the executive committee: S. T. Neill, of Clinton; E. F. Carter, of Columbia; and C. W. Boutin, of Cape Girardeau. Their terms are for a period of three years.

Mr. Hedrick at this time read a letter of resignation as president from Mr. McHenry. A motion was made and unanimously carried that this resignation not be accepted.

The maintenance and plant men then separated into one group and the operators into another. Mr. Quigg was placed in charge of the plant and maintenance conference and Miss Barbara Schultz and Miss Ida Potter in charge of the operators. Each division had round-table discussions of its own problems. Much interest was shown in these conferences and much benefit derived by those attending.

A short business session was held later. Secretary-Treasurer Hedrick's report was read and other matters taken up, among which was the decision to hold district meetings a little later on. The convention then adjourned.

▼ ▼

Bell System May Station Gain a Record

The net increase of 78,200 stations reported by the Bell System for May sets a record high for increased business for any similar month in its history. The April gain was 77,600 and the gain for May, 1935, was 47,600. For the first five months net station gain was 357,000, against a gain of 209,000 in the like 1935 period.